Department of the Army
Aberdeen Proving Ground Regulation 200-30

Environmental Compliance Division

Air Quality Management at Aberdeen Proving Ground

Aberdeen Proving Ground
Department of the Army
Aberdeen Proving Ground, MD
01 March 2003

UNCLASSIFIED

SUMMARY of CHANGE

APGR 200-30
Air Quality Management at Aberdeen Proving Ground

This regulation has been completely revised. The title has been changed from Air Quality to Air Quality Management at Aberdeen Proving Ground to reflect the nature of this new regulation. This revision –

- Changes the format of the previous version of 200-30 to better reflect the nature of air quality management at APG. Chapters 1 and 2 are written to address the managers at APG whereas Chapter 3 is source-specific and written for personnel on the operator level.

- Contains extensive new and updated information that explains exactly how the regulations apply to APG. This document makes APGR 200-30 more applicable to sources by concisely and clearly explaining the regulations to ensure compliance at APG.

Department of the Army
U.S. Army Aberdeen Proving Ground

Aberdeen Proving Ground Regulation
***APGR 200-30**

Environmental Compliance Division

Air Quality Management at Aberdeen Proving Ground

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* This publication supercedes APGR 200-30, dated 2 March 1993.

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CHAPTER 1

INTRODUCTION

Section I

General

1-1. Purpose

This regulation prescribes policies, procedures, and assigns responsibilities for compliance with Federal, State, local and Army regulations regarding air quality at Aberdeen Proving Ground (APG), Maryland. The regulation applies to all APG Garrison Directorates, Tenant Activities, contractors and person(s) located at APG that cause or have the potential to cause the release of emissions into the air.

The Clean Air Act (CAA) is the primary Federal statute regulating air emissions. The CAA categorizes regions of the United States as non-attainment if the air quality within those areas does not meet the required ambient air quality levels set by the National Ambient Air Quality Standards (NAAQS). APG is located in a severe non-attainment area for ozone and thus is subject to stringent requirements to meet ozone standards (NOx and VOCs). The CAA establishes a variety of requirements or standards that the Federal government and States apply to stationary and mobile sources. The 1990 Title V of the CAA Amendments (CAAA) established an operating permit program that is generally administered by State air pollution control agencies authorized by the EPA. All major sources, such as APG, must possess a Title V permit, which includes a compliance schedule, enforceable emission limits and standards, and requirements for submitting monitoring data. Penalties can be assessed against any source that violates any of the requirements of its permit.

1-2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1-3. Explanation of Abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

1-4. Responsibilities

a. Commander, Installation, Aberdeen Proving Ground will-

(1) Ensure APG's compliance with all air quality laws and regulations.

(2) Ensure employees' safety, prevention of accidental releases, and implementation of emergency response procedures.

(3) Ensure the policies and responsibilities set forth in this regulation are followed by all installation activities, tenants, and contractors and that personnel are aware of the consequences of violating the provisions of this regulation.

(4) Ensure language requiring adherence to this regulation is included in all APG contracts.

b. Commander, U.S. Army Garrison, Aberdeen Proving Ground will-

(1) Be responsible for Garrison APG's compliance with all air quality laws and regulations.

(2) Ensure Garrison employees' safety, prevention of accidental releases, and implementation of emergency response procedures.

(3) Ensure the policies and responsibilities set forth in this regulation are followed by Garrison activities and that personnel are aware of the consequences of violation provisions of this regulation.

(4) Include language requiring adherence to this regulation in all APG Garrison contracts.

c. Director, APG Garrison, Directorate of Safety, Health and the Environment (DSHE) will-

(1) Serve as the Commander's central point of contact for air quality concerns at APG.

(2) Oversee the administration of the Air Quality Control Program, which is a function of the Environmental Compliance Division (ECD).

(3) Include language requiring adherence to this regulation in all contracts.

d. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE) will-

(1) Develop and implement an Air Quality Control Program to ensure compliance with applicable air quality laws and regulations by the installation, including all tenant and support activities.

(2) Serve as the APG focal point for all matters related to air quality management.

(3) Conduct routine inspections of air pollution emission sources to ensure that all operations are conducted in accordance with this regulation.

(4) Provide guidance to organizations with air pollution emissions.

(5) Review and approve all plans and procedures developed by tenant and support activities related to air quality control.

(6) Review all potential air pollution source project plans and designs to determine compliance with Federal, State, local, and Army regulations.

(7) Submit application packages and compliance reports to the Maryland Department of the Environment, Air and Radiation Management Administration (MDE-ARMA) and/or the Environmental Protection Agency (EPA) as well as serve as the air quality point of contact.

(8) Maintain the original copy of all approvals, permits, registrations, and correspondence. Provide tenants a copy of the current approval, permit or registration.

(9) Inform tenants of regulatory changes to Federal, State, local, or Army regulations.

(10) Update the definitions, policies, procedures and responsibilities found in this regulation to reflect changing laws and regulations.

(11) Ensure that the appropriate training as specified in this regulation has been administered and that records are maintained.

(12) Maintain and track installation emissions data.

e. APG Garrison Directors, Commanders, and Activity Heads will-

(1) Ensure compliance with all applicable air quality laws and regulations within their organization.

(2) Ensure that the policies, responsibilities, and procedures set forth in this regulation are followed within their areas of responsibility.

(3) Ensure that all personnel within their areas of responsibility are aware of the consequences of violating the provisions of this regulation.

(4) Conduct frequent inspections of sources to ensure compliance with applicable regulations.

(5) Investigate methods that may minimize, or eliminate altogether, the release of air pollutants.

(6) Submit to DSHE-ECD for review and approval all plans and procedures being developed by their organization related to air quality control.

(7) Provide DSHE-ECD information regarding any proposed action or construction, prior to the start of the project, that may require State or Federal air quality program registration, permits, approvals or modifications.

(8) Assist with the gathering of information and preparation of application form(s) required by the MDE-ARMA and/or EPA.

f. Activity Environmental Coordinators will-

(1) Notify the APG Directorate of Safety, Health and Environment of any changes in the facility which requires a modification to the current permit or an issuance of a new permit.

(2) Notify the APG Directorate of Safety, Health and Environment of any problems or releases that may need to be reported.

(3) Notify supervisors of any regulations or policies that directly affect their operations.

(4) Ensure that all employees are properly trained according to air regulations. Maintain records of training.

g. Contractors, Government Owned Contractor Operated Facilities (GOCO) will-

(1) Notify the APG Directorate of Safety, Health and Environment of any changes in the facility that requires a modification to the current permit or an issuance of a new permit.

(2) Notify the APG Directorate of Safety, Health and Environment of any problems or releases that may need to be reported.

(3) Maintain all equipment and pollution control facilities in proper working order in accordance with the requirements of applicable permits and manufacturer's recommendations.

(4) Ensure that appropriate employees are properly trained according to applicable air regulations and maintain records of training for a period of not less than 5 years.

h. Non-GOCO Contractors will-

(1) Adhere to the requirements of this regulation with respect to the specifics of the projects for which they are contracted to perform.

(2) Ensure all equipment installed at APG will meet applicable emission limits unless otherwise specified in the contractors work order contract.

(3) Unless otherwise specified by contract, the contractor will obtain all air permits associated with the execution of their contract before any equipment is installed. All permit applications are to be submitted to the Directorate of Safety, Health and Environment via the contractor's COR.

(4) Notify the APG Directorate of Safety, Health and Environment of any problems or releases that may need to be reported.

(5) Maintain all equipment and pollution control facilities in proper working order in accordance with the requirements of applicable permits and manufacturers recommendations during the period of the contract

(6) Ensure that appropriate employees are properly trained according to applicable air regulations and maintain records of training for a period of not less than 5 years.

CHAPTER 2

COMPLIANCE MANAGEMENT

2-1. Permitting

2-1-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the applicable provisions of the Federal and State of Maryland regulations with respect to permitting air emission sources.

2-1-2. Background

Title V of the Clean Air Act, codified as 40 CFR Part 70, and State of Maryland regulations codified under COMAR 26.11.02, outline the requirements for permits, approvals, and registrations. All sources, which have the potential to emit an air pollutant, require a permit to construct or a registration permit unless the source type is listed in COMAR 26.11.02.10. COMAR 26.11.02.10 (Appendix B Section I) lists sources exempt from a Permit to Construct or approval from the MDE.

Likewise, all sources, which have the potential to emit an air pollutant, are required to be a part of the Title V permit (40 CFR Part 70) unless the source type is listed in COMAR 26.11.03.04 (Appendix B Section II) or the source is not under the direct control of the U.S. Army. Sources, such as the AAFES facilities, are exempt due to the fact that while they are located on the APG premises, the U.S. Army does not control them.

The Edgewood and Aberdeen Areas of APG are considered to be major sources for NOx (i.e., the potential to emit is greater than 25 tons/year for NOx). Therefore, a Title V permit is required for both areas. The Title V permit acts as a Permit to Operate for the sources that are included. The Aberdeen (AA) and Edgewood Areas (EA) of APG each hold a Part 70 Permit to Operate:

AA: Part 70 Permit Number 25-025-00081, expires 31 January 2005
EA: Part 70 Permit Number 24-025-00082, expires 31 October 2004

Permitted sources that are exempt from Part 70 permit requirements must comply with the requirements that are outlined in the Permit to Construct or Registration. Sources that are exempt from the Part 70 process are listed in COMAR 26.11.03.04 (Appendix B Section II) of this regulation. It should be noted that emission units that use Class I or Class II ozone depleting substances are not exempt from the Part 70 permit process.

Regardless of the permit type, it must be obtained before any construction or modification of a source can be conducted.

2-1-3. Policy

a. It is APG's policy to comply fully with the applicable air permitting requirements.

b. Likewise, it is APG's policy to minimize its air emissions and accurately reflect additions and reductions.

2-1-4. Requirements

The required actions are as follows:

a. Any organization at APG that proposes to install or modify any source, which has the potential to emit an air pollutant, must apply for a permit unless the source is an exempt source. Exempt sources are defined in section 2-1-4-2 of this regulation.

b. The proponent of the action is required to collect the following information from the equipment vendors or the activity coordinator in order to complete the appropriate permit applications:

- Location of equipment/activity
- Construction/Activity begin and end dates
- If there is existing equipment, the initial operation date
- Make, model, serial number, features, manufacturer of the equipment
- Person installing the equipment (i.e. contractor information): name, phone, address
- Control devices associated with the equipment (i.e. scrubber, pack tower): device type, manufacturer, model number, serial number, control efficiency (%), capture efficiency (%), air pollutants controlled
- Annual fuel consumption for this equipment/activity (if applicable)
- Annual material usage for this equipment/activity (if applicable): chemical/brand name, CAS number, substance type (coating, solvent, etc), actual usage, maximum usage (gal/day and gal/yr), VOC content
- Operating schedule (how many hours/day, days/weeks, weeks/year)
- Seasonal variation in operation (if applicable)
- Emissions information (amount of NOx, SOx, VOC, CO, PM_{10}, and TAPs): actual/predicted annual emissions, potential to emit (hourly and annually), and the CAS numbers
- Maximum rated heat input of the unit (if applicable)
- Stack information (if applicable): height, diameter, temperature, design flow rate, actual flow rate, and velocity

c. The proponent must complete application forms for the permit to construct/registration and/or a Title V permit concurrently and submit the applications to DSHE.

d. Proponent shall perform a conformity review for the project in accordance with section 2.2 of this regulation.

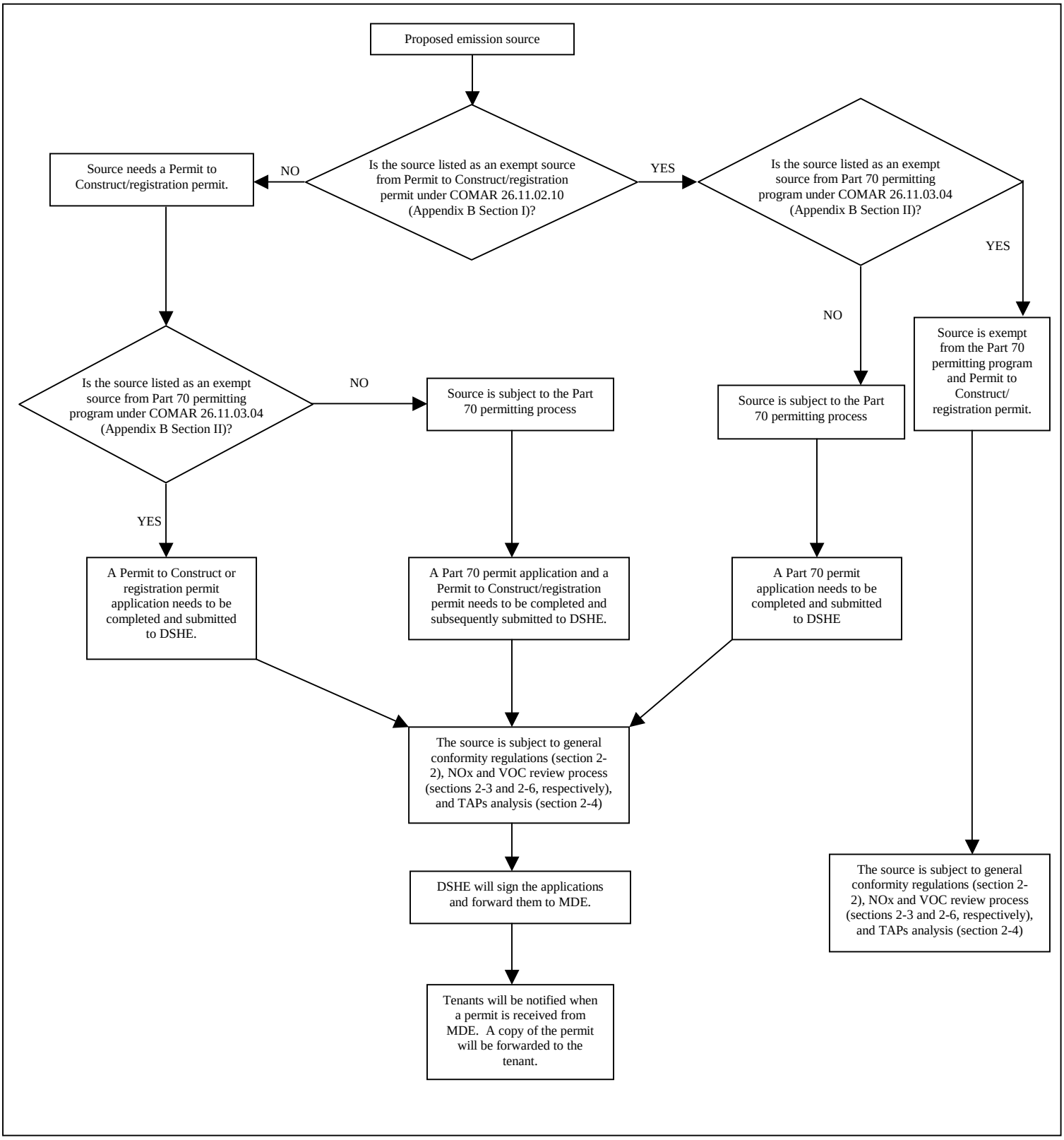
e. Proponent shall perform a TAPs analysis for sources requiring a permit to construct or Title V permit in accordance with section 2.4 of this regulation.

f. DSHE shall review the applications for completeness and determine the impact to APG as a whole in terms of increased emissions in accordance with the NOx and VOC review process of this regulation; sections 2.3 and 2.6 respectively. DSHE may request additional information and may require emission reductions from existing sources or the planned source in order to manage total estimates.

g. DSHE will coordinate with MDE including signing and submitting permit applications. DSHE will track progress and notify the proponent of the permit status. Equipment installation or activity may not commence until approval is obtained from the MDE.

Figure 2-1-1 is a summary flow chart of the permitting process at APG.

Figure 2-1-1: Permitting Process



2-1-4-1. Calculating Emissions

The proponent will calculate emissions during the development of the permit application in conjunction with DSHE. The MDE's permitting process requires the calculation of the "potential to emit." The annual "potential to emit" is based on operating 24 hours a day, 365 days per year, unless a Federally Enforceable State Operating Permit (FESOP) restricts the operation.

There are a number of methods that may be used to calculate potential emissions for the purpose of permitting a new or modified emission source. All of the calculations are based on determining the emissions based on the expected number of operating hours, volume of fuel or chemicals consumed in the process, characteristics of the fuel/chemicals, and factors associated with the particular emission source. Information supporting the emissions determinations can come from manufacturer's test data, published data such as AP-42 or estimates. Table 2-1 is an example of the calculations necessary to produce the actual or predicted emissions from a boiler based on the emission factors contained in AP-42.

Table 2-1-1: Example Calculation for Fuel Burning Equipment

Distillate Oil Fired	Emission Factors for Criteria Pollutants (lb/1,000 gal)					
	NOx	SOx*	CO	PM	PM-10**	VOC***
>1 but <100 mmBtu/hr (SCC 1-03-005-02/03)	20	43.20	5	2	1.1	0.34

Natural Gas Fired	Emission Factors for Criteria Pollutants (lb/million cuft)					
	NOx	SOx	CO	PM	PM-10**	VOC***
< 100 mmbtu/hr (1-02-006-02 & 1-03-006-03) Uncontrolled	100	0.6	84	7.6	4.18	5.5

*Emissions factor is obtained by (142+2) x (% sulfur content in fuel oil) where sulfur content is 0.3%.
**Emission factor is PM x 0.55 (AP-42 Table 1.3-7)
*** non-methane VOC

Calculation Method:

$$\textbf{Daily Emissions Rate of each criteria pollutant } \left(\frac{\text{lb}}{\text{day}}\right) = \frac{\left[\text{oil usage}\left(\frac{\text{gal}}{\text{year}}\right) * \left(\frac{\text{emission factor}}{1{,}000}\right)\right] + \left[\text{gas usage}\left(\frac{\text{million cuft}}{\text{year}}\right) * \left(\frac{\text{emissions factor}}{1{,}000{,}000}\right)\right]}{\text{days operated}}$$

Emission factors obtained from AP-42 (9/98) Table 1.3-1 and 1.3-3 for distillate oil usage and AP-42 (3/98) Table 1.4-1 and 1.4-2 for natural gas usage.

2-1-4-2. Exempt Sources

The Maryland regulations recognize a number of activities and sources that are exempt from either the registration permitting process or the Part 70 permitting program. COMAR 26.11.02.10 and 26.11.03.04 list the exemptions from the Permits to Construct/register and Part 70 program; respectively (refer to Appendix B). Proponents are required to determine if their operations are exempt from either or both of these regulations. Regardless of any exemption from permitting, all emission sources are subject to General Conformity Review.

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2-2. General Conformity Review Process

2-2-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to General Conformity.

2-2-2. Background

The General Conformity Rule applies to areas that are considered non-attainment under the CAA. APG is located in a severe non-attainment area for ozone, which means that for all actions, VOC and NOx emissions (ozone precursors) must be evaluated.

The definition of "Federal action" under the General Conformity Rule is very broad and includes any activity that creates an air emission that the Federal government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under Title 23 U.S.C. or the Federal Transit Act. Where the Federal action is a permit, license, or other approval for some aspect of a non-Federal undertaking, the relevant activity is the part, portion, or phase or the non-Federal undertaking that requires the Federal permit, license, or approval.

Appendix C of this regulation contains a list of actions that are exempt from the conformity rule.

2-2-3. Policy

a. It is APG's policy to fully comply with the applicable general conformity requirements.

b. It is APG's policy to ensure that all actions on the Post participate in the general conformity review process.

2-2-4. Requirements

a. Proponents of new non-exempt actions will comply with the conformity rule. The conformity process, commonly referred to as the RONA process at APG, is independent from the NEPA Record of Environmental Consideration or the REC process. Exemption from NEPA does not make an action exempt from the General Conformity Rule. The evaluations are two completely different processes with separate documentation.

b. Proponents will evaluate their action based on the logic contained in Figure 2-2-1.

c. Proponents will calculate expected emissions from non-exempt actions.

d. Proponents will complete a Record of Non-Applicability (RONA) for all exempt actions and for all actions for which calculations demonstrate the emissions are not significant; see note 5 to Figure 2-2-1. The CAA recognizes a number of activities exempt from the conformity process. The proponent must indicate on the RONA form whether the activity is an exempted activity under 40 CFR 93.153 (c) or (d) (refer to Appendix C). Some common APG exemptions are:

(1) Continuing and recurring activities such as permit renewals where activities conducted will be similar in scope and operation to activities currently being conducted (40 CFR 93.153(c)(2)(ii)) (e.g., testing activities)

(2) Routine maintenance and repair (40 CFR 93.153(c)(2)(iv)) (e.g., maintenance on roadways such as filling potholes)

(3) Modification to existing equipment undertaken as a requirement of environmental regulation (40 CFR 93.153(d)(4)) (e.g., installing new emission controls)

(4) Routine, recurring transportation of materiel or personnel ((40 CFR 93.153(c)(2)(vii))

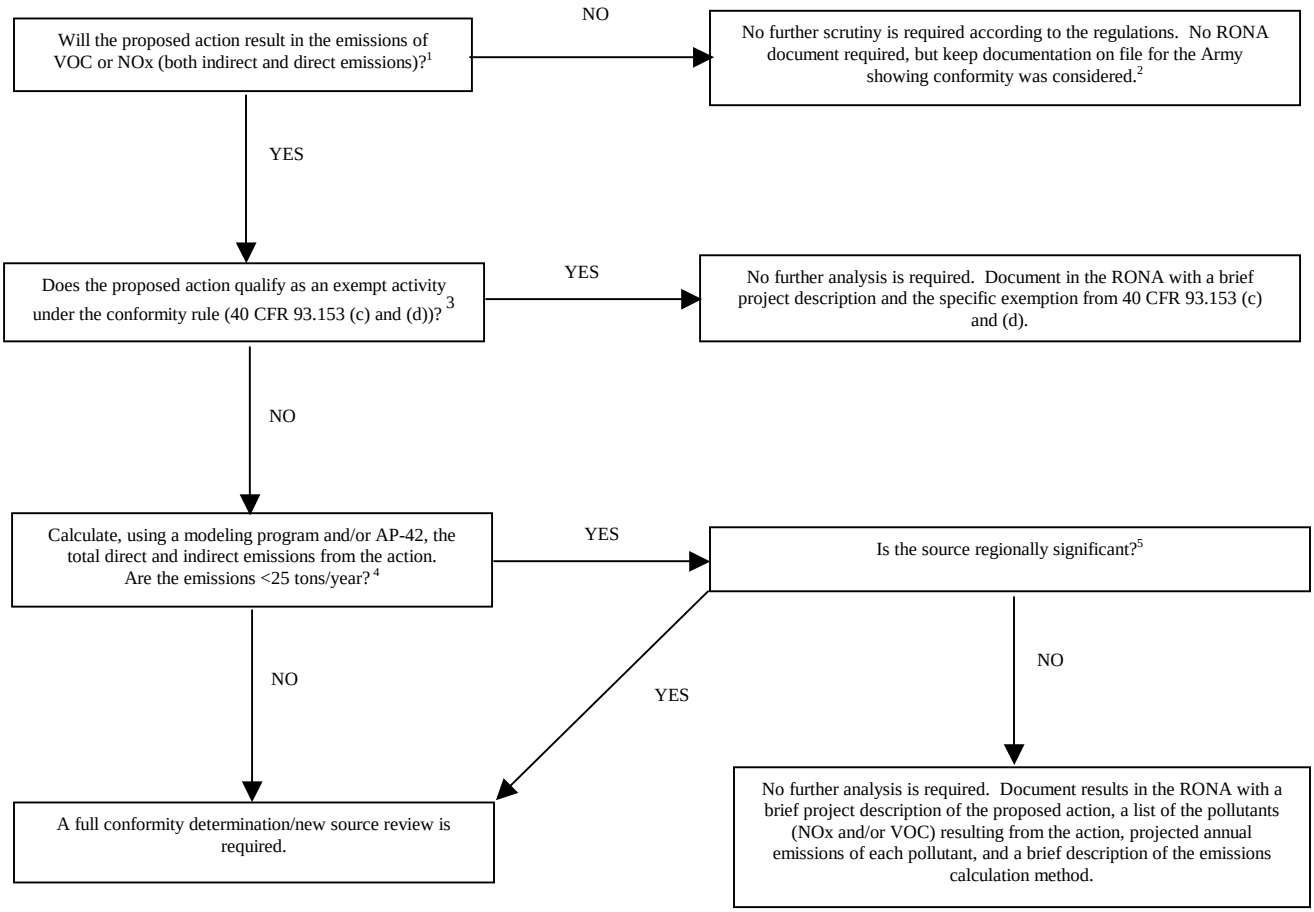
(5) Remedial activities carried out under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (40 CFR 93.153(d)(5))

e. RONAs are to be submitted through the DSHE Air Program coordinator. Figure 2-2-2 contains the RONA form.

f. Actions determined to have significant emissions, must be coordinated through the DSHE Air Program for permitting and planning in accordance with CAA regulations.

g. The DSHE Air Program coordinator will review each RONA and approve or disapprove with comments for additional information or action.

Figure 2-2-1: General Conformity Process



[1] Direct emissions are any emissions that are an immediate result of an action. Examples include any equipment used to facilitate the action (construction vehicles) or new equipment that is a permanent component of the completed action (generators, boilers). Indirect emissions are those that occur at a later time or distance from the place of the action, but are still a reasonable consequence to the action. Examples include increased commuter activity, heating, cooling, potable water, or wastewater treatment needs where those services are provided by the Federal agency sponsoring the action

[2] A Record of Non-Applicability (RONA) is a short, written document used to declare that the requirements of the General Conformity Rule do not apply to a specific action. The installation's environmental coordinator must retain a RONA for a period of 6 years after the completion of the project. The APG RONA form is located in Figure 2-2-2.

[3] A list of the exemptions as found in 40 CFR 93.153 is in Appendix C.

[4] The General Conformity Rule threshold for VOC or NOx is 25 tons/year (40 CFR 93.153 (b)). The majority of APG projects will be below this threshold limit. Note that under COMAR, the New Source Review process may be triggered if the cumulative emissions of NOx over a contemporaneous 5-year period exceed 25 tons/year. For example, an emergency generator equipped with a 1000 HP diesel engine operated 500 hours/year may have a 'potential to emit' NOx of 6.0 tons/year. An individual action involving the installation of one such unit would be below that General Conformity threshold of 25 tons/year. However, it may trigger New Source Review if the additional 6 tons/year result in APG as a whole exceeding the 5-year cumulative net increase threshold of 25 tons/year.

[5] By definition, an action is regionally significant if the total direct and indirect emissions of an individual pollutant amount to 10% or more of the Baltimore non-attainment area's total emissions. This value is updated periodically by the State of Maryland and published in their SIP. The current published emission value for VOC is 274 tons/day and for NOx is 480 tons/day.

Figure 2-2-2: Example RONA Form

RECORD OF NON-APPLICABILITY

Project/Action Name: _____

Project/Action Number: _____

Project/Action POC: _____

Begin Date (MM/DD/YY): _____

End Date (MM/DD/YY): _____

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because:

_____ The project/action is an exempt action under 40 CFR 93.153(c) or (d) _____ _____
(specify applicable exemption)

OR

_____ Total direct and indirect emissions from this project have been estimated at _____ (give estimated emissions for evaluated pollutants for each project year) and are below the de minimus threshold established at 40 CFR 93.153 (b) of _____ (specify name and associated threshold rate for each pollutant under consideration);

AND

The project/action is not considered regionally significant under 40 CFR 93.153(i).

The supporting documentation and emissions estimates are
_____ Attached
_____ Attached to NEPA documentation _____
(reference document)
_____ Other (describe) _____

Date Activity Environmental Coordinator

Date Installation Environmental Coordinator

2-3. NOx Management

2-3-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to NOx management.

2-3-2. Background

Nitrogen oxides (NOx), is the generic term for a group of highly reactive gases which contain nitrogen and oxygen, e.g., nitrogen dioxide and nitric oxide. The primary sources of NOx are motor vehicles, boilers, generators, and other combustion sources (e.g., incinerators). The Aberdeen and Edgewood Areas of APG are regulated as major sources of NOx, which means that either the actual emissions or the potential to emit is greater than 25 tons/year.

2-3-3. Policy

a. It is APG's policy to minimize and track NOx emissions.

b. Likewise, it is APG's policy to maintain an inventory of NOx-emitting sources and to comply fully with all regulations pertaining to NOx.

2-3-4. Requirements

The proper management of NOx is critical for APG so as to avoid the New Source Review Process (NSR). The Aberdeen and Edgewood Areas of APG are located in a severe non-attainment area for NOx. Therefore, if over a 5-year period, there is a net increase of 25 tons/year or more in APG's potential to emit NOx, then APG will become subject to NSR. The term "net increase" means any increase or decrease in actual emissions, since January 1, 1991, in a contemporaneous 5-year period. Requirements under NSR include air quality analyses, application of Lowest Achievable Emission Rate (LAER) control technology, and offsets, i.e., for every 1 ton of new NOx emissions added to APG, 1.3 tons of existing NOx emissions must be removed or reduced from APG. Thus, it is important that APG as a whole keep accurate records of all new sources of NOx added to the Post and any NOx sources that are removed from Post.
The requirements for managing NOx are:

a. The DSHE will track the air quality attainment status designations of APG's Aberdeen and Edgewood Areas.

b. DSHE will track the permits and registration status of all sources of NOx emissions, including the dates the sources were permitted and installed as well as the dates the permits were withdrawn and the equipment decommissioned if the source is no longer used.

c. DSHE will maintain an inventory of NOx sources at APG's Aberdeen and Edgewood Areas, the actual emissions of NOx from these sources, and the aggregated total emissions for each calendar year.

d. DSHE will determine whether the addition of any new source(s) of NOx at APG will cause a net increase in NOx emissions causing APG to become subject to the New Source Review regulations (COMAR 26.11.17).

e. DSHE will, working in conjunction with affected entities, identify and require NOx emission reductions from one or more sources in the event that new or modified sources will result in APG exceeding the 25 tons per year NSR threshold.

f. Tenants/activities operating NOx sources (e.g., boilers and emergency generators) will ensure compliance with the requirements and conditions of COMAR 26.11.09.08 as well as any conditions specified in the applicable construction or operating permits (e.g., Title V permit) issued by MDE.

g. Proponents installing, modifying, or eliminating NOx sources will coordinate their plans through the DSHE Air Program Coordinator. At a minimum, the information to be provided will include equipment model number(s), rated capacities (HP or kWh), fuel consumption data, emission data (i.e., hourly and annual emission rates), and estimated average and maximum projected hours of operation.

h. Proponents of new boilers with heat input ratings greater than 100 million BTU/hr will ensure compliance with New Source Performance Standards for NOx as defined in 40 CFR Part 60 Subparts D (60.40 through 60.46), Da (60.40a through 60.49a) and Db (60.40b through 60.49b).

2-4. TAPs Management

2-4-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to toxic air pollutants (TAPs).

2-4-2. Background

TAPs are those pollutants that are known or suspected to cause cancer or other serious health effects. They are generally classified as either Class I or Class II. MDE annually updates the list of TAPs, which are found in COMAR 26.11.16.06 and 26.11.16.07B; Class I and II, respectively. All Class I and II TAPs are located in Appendix D of this regulation.

Maryland's TAPs regulations are more comprehensive and more complex than EPA's Hazardous Air Pollutant (HAP) regulations. Maryland regulates hundreds of additional chemicals beyond the 188 EPA HAPs (refer to Appendix E); thus, this section generally only refers to TAPs. A major source of HAPs, under the Clean Air Act, refers to a stationary source or group of stationary sources located at APG that emits or has the potential to emit pollutants, other than radionuclides, in excess of 10 tons per year of a listed HAP or 25 tons per year or more of any combination of HAPs. While APG currently is not a major source for HAPs, there are still requirements that must be followed.

At APG, TAPs are emitted from mobile sources and stationary sources such as, but not limited to, gasoline storage tanks, fire test labs, laboratories, and paint spray booths. Fuel-burning equipment, charbroilers, pit barbecues, and retail gasoline stations are exempt from the Maryland TAP requirements.

2-4-3. Policy

a. It is APG's policy to fully comply with the applicable toxic air pollutant requirements.

b. It is APG's policy to ensure that all actions on the Post participate in the TAPs review process.

2-4-4. Requirements

a. A proponent that plans to modify an existing source or proposes to construct a new source that will result in the emission of TAPs must review the chemical composition of all materials used in the operation and identify any TAPs that are present. Information about chemical composition may be found in the Material Safety Data Sheets (MSDS).

b. If any TAPs are likely to be emitted, then a permit must be obtained unless the source is a qualified exemption for which a Permit to Construct is not required; see Section 2-1. The three major steps in the regulatory process are:

(1) Estimation of emission rates for TAPs emitted from the specific source and the entire APG premises.
(2) Demonstration that emissions of TAPs will be controlled using Best Available Control Technology (T-BACT). T-BACT means control technology that results in the maximum degree of emission reduction that the Department determines, on a case-by-

case basis, is available for each toxic-air pollutant discharged by the source, taking into account the potency and toxicity of each toxic air pollutant and the technical and economic feasibility of control. T-BACT includes production, operation, and maintenance procedures, emission control technology, and other emission reduction technologies or a combination of these technologies and procedures.

(3) Demonstrate that the emissions of the TAP(s) from the premises will not "unreasonably endanger human health" by conducting a screening analysis that shows that total allowable emissions of TAPs from the premises will not exceed the applicable screening levels. The TAP screening levels are specified in COMAR 26.11.16.02. A screening analysis may be conducted using dispersion modeling techniques as specified in the Technical Memorandum 86-02, "Ambient Air Quality Impact Screening Analysis for Toxic Air Pollutants," (Maryland Department of the Environment) or using emission tables found in COMAR 26.11.16.02. In lieu of the screening analysis, a "Second Tier Analysis" may be conducted using dispersion modeling procedures consistent with the U.S. Environmental Protection Agency's dispersion modeling guidelines.

c. Sources emitting Class I TAPs are exempt from the requirements of Steps b (2) and b (3) if the total allowable emissions from APG's premises are:

(1) Equal to or less than 0.5 pounds/hour,
(2) All applicable screening levels for the TAP are greater than 200 micrograms/cubic meter, and
(3) The risk-based screening level is greater than 1 microgram/cubic meter.

d. Sources emitting Class II TAPs are exempt from Steps b (2) and b (3) if the total allowable emissions from APG's premises are:

(1) Equal to or less than 0.5 pounds/hour and
(2) All applicable screening levels for the TAP are greater than 200 micrograms/cubic meter.

e. Emissions of Class II TAPs that will not result in an 8-hour concentration exceeding 0.02 micrograms/cubic meter beyond the property line, are exempt only from Step b (3).

f. The DSHE will maintain an accurate emission inventory for all sources of TAPs at APG since TAP emissions from the entire premises must be considered during screening analyses; not just those from an individual source.

2-5. PM_{10} Management

2-5-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to particulate matter less than 10 microns in size (PM_{10}).

2-5-2. Background

Particulate matter (PM) is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. PM_{10} refers to particulate matter less than 10 microns in size. PM is typically emitted from any combustion or dust generating processes.

The Aberdeen and Edgewood Areas of APG are located in an attainment area for PM and do not qualify as major stationary sources for PM. Because of this attainment status, Prevention of Significant Deterioration (PSD) regulations would apply to new major stationary sources. PSD regulations require sources to demonstrate no significant deterioration of air quality through application of best available control technology (BACT), ambient air quality analyses, modeling, and analysis of visibility, vegetation, and soil impacts.

2-5-3. Policy

a. It is APG's policy to fully comply with the applicable PM_{10} requirements.

b. It is APG's policy to ensure that all sources and activities practice proper PM_{10} management.

2-5-4. Requirements

APG sources that emit PM_{10} from specific operations or activities such as, but not limited to, paint spray booths, boilers, construction, demolition, or other actions that might result in the release of airborne particulate matter (i.e. test tracks) must comply with the general provisions of COMAR that relate to PM_{10} management. Therefore, to meet APG policy and the requirements of COMAR, the following apply:

a. There will be no emissions visible to the human eye except water in an uncombined form. Visible emissions are permitted under certain and restrictive circumstances such as during boiler maintenance and military ordnance testing (refer to Chapter 3 for specific source exemptions).

b. Tenants and activities will ensure that particulate emissions do not exceed 0.03 grains/dry standard cubic foot of exhaust gas.

c. DSHE will calculate PM emissions as part of the annual emissions certification report.

d. Reasonable precautions will be taken during vehicle testing, construction, and demolition to prevent particulate matter from becoming airborne. Reasonable precautions must include, but are not limited to:
   (1) Use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.
   (2) Application of asphalt, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces that can create airborne dusts.

(3) Installation and use of hoods, fans, and/or dust collectors to enclose and vent the handling of dusty materials.

e. Tenants/activities conducting or sponsoring sandblasting or similar abrasive surface removal activities will do so within contained areas. Containment may include permanent enclosure designed for sandblasting or temporary containment structures.

f. Open trucks must be covered at all times while in use unless the cargo area is empty. Tenants/activities will require contractors' vehicles to be covered as well.

g. A proponent of a new source will contact DSHE if the proposed emissions meet either of the following conditions that would qualify it as a major stationary source making PSD regulations potentially applicable.

(1) Any sources that emit or have the potential to emit more than 250 tons/year of sulfur dioxide, or

(2) Listed sources that emit or have the potential to emit more than 100 tons/year of sulfur dioxide. Listed sources include, but are not limited to, fossil fuel boilers (or combinations thereof) totaling more than 250 million BTU/hour heat input.

2-6. VOC Management

2-6-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the applicable provisions of the Federal and State of Maryland regulations with respect to the management of sources that emit volatile organic compounds (VOCs).

2-6-2. Background

Volatile organic compounds are organic compounds that have a vapor pressure greater than 0.002 pounds per square inch (0.013 kilonewton/square meter) absolute. VOCs react with NOx in the presence of sunlight and cause or contribute to ozone formation. Sources of VOCs include most paints, solvents, and gasoline.

APG is located in a severe non-attainment area for ozone, which means that all proposed actions that result in a release of VOC must be carefully evaluated to determine if a permit or permit modification is required. Any stationary source that has the potential to emit more than 25 tons/year of VOCs is considered to be a "major stationary source". A major stationary source of VOCs must use Reasonable Available Control Technology (RACT) and "good operating practices" to control VOC emissions.

2-6-3. Policy

a. It is APG's policy to comply fully with all regulations concerning management of VOCs.

b. It is APG's policy to ensure that all sources and activities on Post participate in proper VOC management practices.

2-6-4. Requirements

a. Proponents of sources that emit or have the potential to emit VOCs must notify DSHE of all new and terminated sources of VOC. Typical VOC sources at APG include, but are not limited to, paint spray booths, solvent cleaning operations, and gasoline storage tanks.

b. Any source constructed on or after May 12, 1972, may not cause or permit the discharge of VOCs, in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall. Currently there are no sources at APG that have VOC control technology reducing the emissions by 85 percent or more, thus all VOC sources are subject to the 20 pounds per day limit.

c. The VOC content of materials used in metal coating operations, vehicle refinishing operations, and surface preparation operations are restricted by the regulations. Specific information for each source type on material content limitations is located in Chapter 3. Data on the VOC content is typically included in the product's Material Safety Data Sheets (MSDS). Operators of paint spray booths will adhere to the VOC content requirements.

d. All gasoline storage tanks will be equipped with Stage I or Stage II vapor recovery systems to reduce the fugitive emissions from storage tanks located at APG. Operators of gasoline storage tanks will follow the specific requirements located in Section 3-4 for gasoline storage tanks.

e. All operators of VOC emission sources must provide DSHE with annual usage volumes and VOC content of all VOC containing materials.

f. DSHE must report the total VOC emissions to the MDE and EPA annually through the emissions certification report.

2-7. SOx Management

2-7-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with all the regulations concerning the management of sulfur oxide gases (SOx).

2-7-2. Background

Sulfur oxide gases (SOx) are formed when sulfur-containing fuel, such as coal and oil, is burned. Gaseous SOx dissolves in water vapor to form sulfuric acid, which interacts with other gases and particles in the air to form sulfates and other products that can be harmful to both humans and the environment.

The Aberdeen and Edgewood Areas of APG are located in an attainment area for sulfur dioxide and is not considered a major stationary source. Because of this attainment status, Prevention of Significant Deterioration (PSD) regulations would apply to new major stationary sources. PSD regulations require sources to demonstrate no significant deterioration of air quality through application of best available control technology (BACT), ambient air quality analyses, modeling, and analysis of visibility, vegetation, and soil impacts.

2-7-3. Policy

a. It is APG's policy to fully comply with the applicable SOx requirements.

b. It is APG's policy to ensure that all sources and activities located on the Premises practice proper SOx management.

2-7-4. Requirements

a. Operators of boilers and generators must provide annual fuel consumption and sulfur content data to DSHE.

b. DSHE must calculate annual emissions data and report it to the MDE and EPA.

c. Organizations at APG purchasing fuel oil must obtain a fuel supplier certification consisting of the name of the oil supplier and a statement from the oil supplier that the oil does not have a sulfur content by weight in excess of 0.3%. These certifications must be provided to DSHE and retained for a minimum of 5 years. In addition, certifications for some boilers must be submitted to the MDE in a semi-annual report, as described further in section 3-2.

d. Proponents of new sources that will have actual emissions or the potential to emit more than 250 tons per year of sulfur dioxide must coordinate through DSHE.

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2-8. Ozone Depleting Chemicals Management

2-8-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the applicable provisions of the Federal and State of Maryland regulations with respect to ozone depleting chemicals (ODCs) or substances (ODSs) management.

2-8-2. Background

The Clean Air Act Amendments of 1990 regulate the production and purchase of ODCs, as well as the operation and maintenance of ODC-containing equipment. Ozone depleting substances are categorized as Class I and Class II substances. Examples of Class I substances include chlorofluorocarbons (CFCs), halons, carbon tetrachloride, 1,1,1 trichloroethane (methyl chloroform), and methyl bromide (MBX); Class I substances are no longer produced in the United States. Class II substances only include hydrochlorofluorocarbons (HCFCs), which will continue to be produced in the United States until 2020. Lists of Class I and II ODCs are included in Appendix F.

There are four general types of ODCs historically found at Army facilities: halons, CFCs, HCFCs, and solvents. The Army is requiring the phase-out of Class I ODCs by the end of fiscal year 2003. APG developed an ODC Elimination Plan in June 2000 that accounts for all the Class I ODCs found at APG and outlines a plan for their elimination.

ODCs are typically found in fire suppression systems, HVAC equipment, motor vehicle air conditioning systems, small appliances, and solvents. Requirements applicable to each of these categories are discussed in Section 2-8-4 below.

2-8-3. Policy

It is APG's policy to:

a. Comply fully with all regulations concerning the management of ozone depleting chemicals.

b. Ensure that all sources and activities on the Premises participate in proper management of ozone depleting chemicals.

c. Eliminate all Class I ODCs (including halons, CFCs and solvents) by the end of the fiscal year 2003.

d. Not contract for the use of Class I ODCs.

e. Recover all Class I ODCs at APG, reuse recovered CFCs at APG, and send recovered halons to the Army ODC Reserve.

f. Use only ODC alternatives that have been approved by the EPA SNAP program and have received a toxicity clearance from the Army Surgeon General.

2.8.4 Requirements

The required actions are as follows:

2-8-4-1. General

a. The use of Class I ODCs at APG facilities must be eliminated by the end of the 2003 fiscal year in accordance with the ODC Elimination Plan. However, CFC refrigerant used in Army weapons systems is permitted through the end of fiscal year 2006.

b. Alternatives to halon used in Army weapons systems and to Class II ODCs (e.g., HCFC refrigerants) must be identified by the end of fiscal year 2006. ODC alternatives must be approved by the EPA SNAP program (http://www.epa.gov/ozone/snap/index.html) and receive a Toxicity Clearance from the Army Surgeon General before use in Army facilities. Information about alternatives that have received a Toxicity Clearance can be obtained from the Army's Center for Health Promotion and Preventive Medicine (CHPPM) Directorate of Toxicology (http://www.chppm-www.apgea.army.mil/tox/).

c. All excess or unserviceable ODC-containing equipment must be turned over to the Directorate of Installation Operations (DIO). DIO will arrange for its reuse at APG, disposal, or send it to the Defense Reutilization and Marketing Office (DRMO) for reutilization, transfer, donation or sale. Any equipment sent to DRMO must be accompanied by certification that ODCs have been removed.

d. All Class I ODCs at Army facilities must be recovered from equipment prior to the disposal of such equipment. Any CFCs recovered at APG may be reused on the installation to support existing equipment. Excess Class I ODCs, except R-13 and R-113, must be sent to the Army ODC Reserve at the Defense Supply Center Richmond (DCSR) in Richmond, Virginia. R-13 and R-113 must be sent to the post Defense Reutilization and Marketing Office (DRMO). DRMO will not accept other ODCs that should go back into the Reserve.

e. All containers in which Class I or II ODCs are stored or transported, must possess a warning label in accordance with 40 CFR 82.106. Empty containers, which previously held ODCs, do not require a warning label. All products (such as air conditioning and refrigeration equipment) manufactured after May 15, 1993 that contain a Class I ODC and products directly manufactured with a process that uses a Class I ODC, must also possess a warning label.

f. Tenants must contact DSHE/Fire Department if they have any additional Class I ODCs at their facility that were not addressed in the current ODC Plan.

g. Instructions outlined in the APG ODC Plan must be followed for recovery, retrofit, or replacement of ODCs; their subsequent recovery; and their transportation to the Army ODC Reserve.

h. In the event of an accidental release of ODCs into the environment, the release must be reported to the APG Fire Department and DSHE in accordance with section 3-14 of this regulation.

i. Halons and CFCs do not have reportable quantity listings, but the Class I ODC solvents (carbon tetrachloride, methyl chloroform, etc) are listed as CERCLA reportable chemicals. A release of these chemicals in excess of the reportable quantities must be reported to the National Response Center. DSHE or the APG Fire Department will make the appropriate notification.

j. In the case of CFC loss from HVAC equipment, the equipment is required to be repaired within 30 days. The EPA requires a report on the incident if the system is not repaired or unable to be repaired within 30 days as referenced in 40 CFR 82.166(o) and 40 CFR 82.156(i).

2-8-4-2. Fire Suppression Systems

a. The current ODC Plan lists all Halon 1301 inventoried on APG. If a tenant has Halon 1301 systems in their facility, a cost estimate and priority level for replacement and phase-out has already been established in the ODC Plan. Once budgets are established for replacing individual systems, the tenant must coordinate with DSHE/Fire Department to remove the Halon 1301 from the premises.

b. Halon 1211, which is found in hand-held fire extinguishers, must be replaced through attrition as tenants and DSHE/Fire Department find the canisters out-of-service. Tenants should coordinate with DSHE/Fire Department to replace out-of -service extinguishers.

c. Under 40 CFR 82.270, halons must not be knowingly released or vented during the testing, maintenance, servicing, repair, or disposal of halon-containing equipment, excluding any “de minimis” releases associated with good faith attempts to recover or recycle halons.

d. The testing, maintenance, servicing, repair, or disposal of halon-containing equipment must only be done by trained technicians.

e. Recovered halons must be sent to the Army ODC Reserve.

2-8-4-3. Appliances

a. The appliance category includes any device that contains and uses a Class I or Class II ODC, such as commercial air-conditioning and refrigeration systems, chillers, freezers and compressors removed from such systems.

b. ODCs must not be knowingly released or vented during the maintenance, servicing, repair, or disposal of appliances, excluding any “de minimis” releases associated with good faith attempts to recover or recycle refrigerant.

c. No more than 1.5 percent of refrigerant may be released by persons reclaiming refrigerant.

d. Any commercial or industrial refrigeration equipment containing more than 50 pounds of refrigerant that leaks 35 percent or more of its total charge in a 12-month period must be repaired to bring the annual leak to below 35 percent. If it cannot be repaired, it must be replaced.

e. Likewise, any comfort cooling equipment containing more than 50 pounds of refrigerant that leaks 15 percent or more of its total charge in a 12-month period must be repaired to bring the annual leak to below 15 percent. If it cannot be repaired, it must be replaced.

f. Persons either disposing or opening appliances for maintenance, service, or repair must evacuate the refrigerant using recovery or recycling equipment certified pursuant to 40 CFR 82.158. Prior to opening the unit, technicians certified pursuant to 40 CFR 82.161 must verify that the level of evacuation specified in Table 2-8-1 has been achieved. The levels specified in Table 2-8-1 need not be met if these levels are not attainable because of leaks in the unit.

Table 2-8-1: Required Levels of Evacuation for Appliances

Type of appliance	Inches of Hg Vacuum (relative to standard atmospheric pressure of 29.9 inches Hg)	
	Using recovery or recycling equipment manufactured or imported before Nov. 15, 1993	Using recovery or recycling equipment manufactured or imported on or after Nov. 15, 1993
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing 200 pounds or more of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing 200 pounds or more of refrigerant	4	15
Very high-pressure appliance	0	0
Low-pressure appliance	25 mm Hg absolute	25 mm Hg absolute

g. Any appliances bound for disposal must be turned in to DIO. DIO will either arrange for ODCs to be removed at APG prior to shipment to a disposal site, or send it to an approved disposal site that will recover any remaining ODCs prior to disposal.

h. If ODCs are recovered prior to shipment, the appliance must be accompanied by a certification that any refrigerant that has not leaked out has been recovered in accordance with 40 CFR 82.156. The certification must contain the name and address of the technician as well as the technician's signature and the date. A copy of the certificate must be maintained with the Disposal Turn-In Document (DTID) for 3 years. A second copy of the certificate must accompany the equipment to the disposal site.

i. Once the ODCs are removed from the appliance, the equipment must be marked as being empty.

j. Usable appliances must be turned in to DIO with the refrigerant intact, and will be sent by DIO to DRMO for reutilization, transfer, donation, or sale. The Disposal Turn-In Document must be marked "Contains Refrigerant" and the type of refrigerant (e.g., R-11, R-12).

2-8-4-4. Small Appliances

a. The small appliance category includes equipment such as refrigerators, freezers, drinking water chillers, ice makers, ice cream makers, window air-conditioning units, and compressors removed from such equipment.

b. ODCs must not be knowingly released or vented during the maintenance, servicing, repair, or disposal of appliances, excluding any "de minimis" releases associated with good faith attempts to recover or recycle refrigerant.

c. No more that 1.5 percent of refrigerant may be released by persons reclaiming refrigerant.

d. All persons either disposing of small appliances, or opening such units for maintenance, service or repair must use recycling or recovery equipment certified pursuant to 40 CFR 82.158. When using recycling and recovery equipment manufactured prior to November 15, 1993, at least 80

percent of the refrigerant must be recovered. When using recycling and recovery equipment manufactured after November 15, 1993, at least 90 percent of the refrigerant must be recovered when the compressor is operating, or 80 percent when the compressor is not operating. Alternately, the small appliance must be evacuated to four inches of mercury vacuum.

e. Any small appliances bound for disposal must be turned in to DIO. DIO will either arrange for ODCs to be removed at APG prior to shipment to a disposal site, or send it to an approved disposal site that will recover any remaining ODCs prior to disposal.

f. If ODCs are recovered prior to shipment, the small appliance must be accompanied by a certification that any refrigerant that has not leaked out has been recovered in accordance with 40 CFR 82.156. The certification must contain the name and address of the technician as well as the technician's signature and the date. A copy of the certificate must be maintained with the Disposal Turn-In Document (DTID) for 3 years. A second copy of the certificate must accompany the equipment to the disposal site. Once the ODCs are removed from the small appliance, the equipment must be marked as being empty.

g. Usable small appliances must be turned in to DIO with the refrigerant intact, and will be sent by DIO to DRMO for reutilization, transfer, donation or sale. The Disposal Turn-In Document must be marked "Contains Refrigerant" and the type of refrigerant (e.g., R-22).

2-8-4-5. Motor Vehicle Air Conditioning Systems

a. Motor vehicle air conditioning systems include air conditioning units installed in automobiles, trucks and buses. Tactical vehicles are exempt.

b. ODCs must not be knowingly released or vented during the maintenance, servicing, repair or disposal of motor vehicle air conditioners (MVAC), excluding any "de minimis" releases associated with good faith attempts to recover or recycle refrigerant.

c. No more that 1.5 percent of refrigerant may be released by persons reclaiming refrigerant.

d. Any repair or servicing of MVAC at APG must be done using equipment approved pursuant to 40 CFR 82.34. Any person repairing or servicing MVAC units must be properly trained and certified by a technician-training program approved pursuant to 40 CFR 82.40.

e. MVAC units being repaired must be evacuated using an approved recovery system. The recovered refrigerant must be returned to the MVAC once the repair has been successfully completed. Any excess refrigerant must be reused or recycled.

f. Prior to any vehicle being permanently disposed (scrapped), ODCs must be extracted from the MVAC by a technician trained and certified pursuant to 40 CFR 82.161, using approved equipment, such that system pressure is reduced to or below 4 inches of mercury vacuum. The refrigerant may be used to charge or recharge other MVAC units.

g. Any MVAC servicing done by contractor technicians must also comply with the above requirements.

2-8-4-6. Solvents

a. The use of solvents or cleaning fluids containing Class I ODCs (e.g., carbon tetrachloride, 1,1,1 trichloroethane, trichlorotrifluoroethane) must be eliminated by the end of fiscal year 2003.

b. Excess solvent must be turned in to the Army ODC Reserve. Excess 1,1,1-trichloroethane and trichlorotrifluoroethane must be in their original containers in which the seal has never been broken. The turned in containers must be tagged in accordance with DOD ODS Turn-In Procedures, including the shippers DOD Activity Address Code (DODAAC), the POC and phone number, the National Stock Number (NSN), type of ODC, and quantity.

c. Substitutes must have been approved by the EPA SNAP program and must have received a toxicity clearance from the Army Surgeon General. Lists of approved substitutes may be found at the EPA SNAP program web site (http://www.epa.gov/ozone/snap/index.html). The toxicity clearance procedure and lists of Army approved substitutes may be found at the Army's Center for Health Promotion & Preventive Medicine (CHPPM) Directorate of Toxicology web site (http://www.chppm-www.apgea.army.mil/tox/).

2-8-4-7. Non-Essential Products

a. The Non-Essential Products category includes non-essential products containing Class I ODCs as defined in 40 CFR 82.66. Examples of such products include cleaning fluids, foam products, aerosol products and safety or alarm horns.

b. The purchase of such products is prohibited.

2-9. Recording and Record Keeping Requirements

2-9-1. Scope

This section discusses APG's obligation under current regulation for reporting and record keeping in general terms. More specific information is provided by source type in Chapter 3.

2-9-2. Background

A multitude of records are necessary to demonstrate that APG is in compliance with its operating permits and the relevant air regulations. Records include permit-required actions, training records, and data required by DSHE to assess APG's continued compliance. All appropriate records must be maintained in accordance with the Army Records Information Management System (ARIMS).

2-9-3. Policy

It is APG's policy to record and maintain all necessary information such that APG is able to demonstrate compliance with the relevant air regulations and current permits.

2-9-4. Requirements

a. Each source listed in the APG Title V permit must keep records in accordance with the permit requirements. These records must be maintained on site and be available for review by DSHE or the MDE.

b. Tenants and/or activities must keep records in accordance with the specific record keeping requirements discussed in Chapter 3 of this regulation.

c. DSHE must compile all data for reporting to regulatory bodies. This includes, but is not limited to, the EPA, the MDE, and Harford County.

d. DSHE will keep all original permits and correspondence with regulatory agencies. A copy will be provided to the appropriate tenant/activity.

e. Accidental releases and deviations from permit conditions must be reported immediately to DSHE. DSHE will make the reports and contacts to the regulatory agencies as appropriate.

f. Air program required training records must be maintained at the facility as well as in the DSHE office. Chapter 3 of this regulation specifies the training requirements for each source type.

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CHAPTER 3

OPERATIONAL COMPLIANCE

3-1. Paint Spray Booths

3-1-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to operation of paint spray booths.

3-1-2. Background

There are three types of paint spray booths located at APG – vehicle refinishing, miscellaneous metal coating, and curing booths. Each of the booths has specific requirements and limitations.

3-1-3. Policy

a. It is APG's policy to ensure that all paint spray booth operations on the Post are in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to paint spray booths:

(1) COMAR 26.11.19.13: Miscellaneous Metal Coating
The facility must comply with the emissions standards listed in this COMAR chapter and summarized in Table 3-1-1.

(2) COMAR 26.11.19.23: Control of VOC Emissions from Vehicle Refinishing
The facility must comply with the emissions standards listed in this COMAR chapter and summarized in Table 3-1-2.

(3) COMAR 26.11.06.02: Visible Emissions
The facility may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers.

(4) COMAR 26.11.06.03: Particulate Matter
The facility may not cause or permit to be discharged into the outdoor atmosphere from any installation, particulate matter in excess of 0.03 gr/SCFD (grains per dry standard cubic foot), which is equivalent to 68.7 mg/dscm (milligrams per dry standard cubic meter).

(5) COMAR 26.11.06.06: Volatile Organic Compounds
A facility may not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972, in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall.

(6) COMAR 26.11.15.05: Control Technology Requirements
A facility may not cause, reconstruct, operate, or cause to be constructed, reconstructed, or operated, any installation or source, constructed after July 1, 1988, that will discharge a toxic air pollutant to the atmosphere without first installing and operating T-BACT.

(7) COMAR 26.11.15.06: Ambient Impact Requirement
A facility may not construct, modify, or operate or cause to be constructed, modified, or operated any installation or source, constructed after July 1, 1988, without first demonstrating that the total allowable emissions of each toxic air pollutant discharged by the facility will not unreasonably endanger human health.

(8) Permits to Construct
The permits to construct for the various paint spray booths contain specific operational limits that apply to the particular booth.

3-1-4. Requirements

There are required responsibilities, record-keeping and operational requirements, emission standards, and reporting requirements specific to paint spray booth operations as outlined in the following.

3-1-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to paint spray booths.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collect all necessary records and information for reports.
(3) Collect the daily log sheets monthly to verify that the VOC calculations are correct and that no emission limits have been exceeded.

b. Activity Environmental Coordinator

(1) Ensure that all materials purchased are part of the Hazardous Inventory Tracking System (HITS), and that the total volume and VOC content of all materials purchased is maintained for 2 years.
(2) Ensure that daily logs sheets of material usage and hours operated are maintained at the paint spray booth. Maintain a copy of the records for a period of at least 5 years.
(3) Ensure that the booth operators properly calculate VOC emissions on a daily basis.
(4) Maintain MSDSs for all materials utilized at the facility. The MSDSs must be maintained on file for five years from the paint's last usage or stockage date.
(5) Submit daily log sheets to DSHE on a monthly basis. Make all other records available upon request.
(6) Ensure that the paint spray booth is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE.
(7) Where appropriate, coordinate miscellaneous metal coating operations with other booths located on Post as discussed in Section 3-1-4-3.

(8) Measure or calculate monthly the particulate emissions from the paint spray booth. Maintain records of measurements or calculations.

c. Contractors, Governmental Owned Contractor Operated Facilities (GOCO)

(1) Ensure that all materials purchased are part of the Hazardous Inventory Tracking System (HITS), and that the total volume and VOC content of all materials purchased is maintained for 2 years.
(2) Ensure that daily logs sheets of material usage and hours operated are maintained at the paint spray booth. Maintain a copy of the records for a period of at least 5 years.
(3) Ensure that the booth operators properly calculate VOC emissions on a daily basis.
(4) Maintain MSDSs for all materials utilized at the facility. The MSDSs must be maintained on file for five years from the paint's last usage or stockage date.
(5) Submit daily log sheets to DSHE on a monthly basis. Make all other records available upon request.
(6) Ensure that the paint spray booth is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE.
(7) Where appropriate, coordinate miscellaneous metal coating operations with other booths located on Post as discussed in Section 3-1-4-3.
(8) Measure or calculate monthly the particulate emissions from the paint spray booth. Maintain records of measurements or calculations.

d. Non-GOCO Contractors

(1) Maintain the total volume and VOC content of all materials purchased for a period of 2 years.
(2) Ensure that daily logs sheets of material usage and hours operated are maintained at the paint spray booth. Maintain a copy of the records for a period of at least 5 years.
(3) Ensure that the booth operators properly calculate VOC emissions on a daily basis.
(4) Maintain MSDSs for all materials utilized at the facility. The MSDSs must be maintained on file for five years from the paint's last usage or stockage date.
(5) Submit daily log sheets to DSHE via the contractor's COR, on a monthly basis. Make all other records available upon request.
(6) Ensure that the paint spray booth is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE via the contractor's COR.
(7) Where appropriate, coordinate miscellaneous metal coating operations with other booths located on Post as discussed in Section 3-1-4-3.
(8) Measure or calculate monthly the particulate emissions from the paint spray booth. Maintain records of measurements or calculations.

e. Paint Spray Booth Operators

(1) Maintain records of daily material usage and hours operated at the paint spray booth for a period of at least 5 years.
(2) Maintain MSDSs for all materials utilized at the facility. The MSDSs must be maintained on file for five years from the paint's last usage or stockage date.
(3) Calculate VOC emissions rates on a daily basis and ensure that they are within the regulatory limits.
(4) Ensure that the paint spray booth is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to appropriate AEC.

3-1-4-2. Record-keeping Requirements

a. All painting material purchased in any type of paint spray booth – curing booth, vehicle refinishing, or miscellaneous metal parts – must be recorded monthly. Information to be included is the total volume and VOC content of coatings as well as clean-up and surface preparation material purchased. This information is maintained by the Hazardous Inventory Tracking System (HITS). Each AEC shall ensure that all materials purchased at each booth are part of HITS. These records must be maintained for 2 years and be available upon request.

b. Operators must keep a daily log of material usage and hours operated. The daily log sheets need to be submitted to DSHE on a monthly basis. These records need to be maintained at the paint spray booth for at least 5 years and made available upon request. There are two types of log sheets that are utilized based on the type of painting that is conducted at the booth. A typical log sheet must include the date, coating type, manufacturer name, material name, amount of the material used, the total VOC, the hours operated, the items coated, and the operator's initials. An example daily paint spray booth log with no mixing involved is shown in Figure 3-1-1. The type of item coated is listed under the coating type. If applicable, the logs shall also include the coating name, reducer name, hardener name, the mix ratio, and the total VOC as applied. An example daily VOC paint spray booth log, where mixing occurs, is shown in Figure 3-1-2. Figures 3-1-3 and 3-1-4 demonstrate how the VOC calculations should be performed once the data is recorded onto the daily log sheets.

c. DSHE will collect the material usage and VOC content of the materials used at each paint spray booth to include in the Annual Emissions Certification, which will be prepared by DSHE; see section 2-9.

d. Each facility must keep on record MSDSs for all paints that are used at the facility. The MSDS must contain VOC data that is based on EPA Method 24 or equivalent. The MSDSs must be kept on file for five years from the paint's last usage or stockage date and the MSDSs must be made available upon request.

Figure 3-1-1: Example Paint Spray Booth Log

Daily VOC Paint Spray Booth Log

MDE Registration Number 12-6-0162

Building Number 525 Booth #1

Date 01/15/02

Coating Type	Manufacturer	Material Name	Amount Used (gal)	VOC Content (lb/gal)	Total VOC Applied (lbs)	Hours Operated	Operator Initials
Topcoat Military Tank	Sherwin Williams	Green Carc	1.5	3.5	5.25	2.5	MED

Figure 3-1-2: Example Paint Spray Booth Log with Mixing Ratios

Daily VOC Paint Spray Booth Log

MDE Registration Number 12-6-0162

Building Number 525 Booth #1

Date 01/15/02

Coating Type	Coating		Reducer		Hardener/Other		Mix Ratio			Amount Used (gal)	VOC Content (lb/gal)	Total VOC Applied (lbs)	Hours Operated	Worker Initials
	Name	VOC (lb/gal)	Name	VOC (lb/gal)	Name	VOC (lb/gal)	Coating	Reducer	Hardener					
Sherwin Williams Primer Military Tank	8827	5.5	8837	6.5	5150	1.5	8	2	1	2	5.32	10.64	3	MED

Figure 3-1-3: Example VOC Calculations for Paint Spray Booth with No Mixing

Calculate the Total VOC applied (lbs) in a non-mixed paint

$$\text{Total VOC Applied (lbs)} = \left[\left(\text{VOC Content of Coating (lb/gal)} * \left(\frac{\text{Coating Mix Ratio}}{\text{Total Mix Ratio}}\right)\right) + \left(\text{VOC Content of Reducer (lb/gal)} * \left(\frac{\text{Coating Mix Ratio}}{\text{Total Mix Ratio}}\right)\right) + \left(\text{VOC Content of Hardener (lb/gal)} * \left(\frac{\text{Coating Mix Ratio}}{\text{Total Mix Ratio}}\right)\right)\right] * \text{Amount Used (gal)}$$

From the example paint spray booth log:

Coating Type	Manufacturer	Material Name	Amount Used (gal)	VOC Content (lb/gal)	Total VOC Applied (lbs)	Hours Operated	Operator Initials
Topcoat	Sherwin Williams	Green Carc	1.5	3.5	5.25	2.5	MED

Total VOC Applied (lbs) **= 1.5** ***(gals)*** *** 3.5** ***(lb/gal)***

Total VOC Applied (lbs) **= 5.25** ***lbs***

Figure 3-1-4: Example VOC Calculations for Paint Spray Booth with Mixing Ratios

Calculate the Total VOC applied (lbs) to a mixed paint

$$\text{Total VOC Applied (lbs)} = \left[\left(\text{VOC Content of Coating (lb/gal)} * \left(\frac{\text{Coating Mix Ratio}}{\text{Total Mix Ratio}}\right)\right) + \left(\text{VOC Content of Reducer (lb/gal)} * \left(\frac{\text{Coating Mix Ratio}}{\text{Total Mix Ratio}}\right)\right) + \left(\text{VOC Content of Hardener (lb/gal)} * \left(\frac{\text{Coating Mix Ratio}}{\text{Total Mix Ratio}}\right)\right)\right] * \text{Amount Used (gal)}$$

Coating Type	Coating		Reducer		Hardener/Other		Mix Ratio			Amount Used (gal)	VOC Content (lb/gal)	Total VOC Applied (lbs)	Hours Operated	Worker Initials
	Name	VOC (lb/gal)	Name	VOC (lb/gal)	Name	VOC (lb/gal)	Coating	Reducer	Hardener					
Sherwin Williams Primer	8827	5.5	8837	6.5	5150	1.5	8	2	1	2	5.32	10.64	3	MED

$$\sum \textit{Mixed Ratios} = 11$$

$$\textit{Total VOC Applied (lbs)} = \left[\left(5.5\ \textit{(lb/gal)} * \left(\frac{8}{11}\right)\right) + \left(6.5\ \textit{(lb/gal)} * \left(\frac{2}{11}\right)\right) + \left(1.5\ \textit{(lb/gal)} * \left(\frac{1}{11}\right)\right)\right] * 2\ \textit{(gal)}$$

$$\textit{Total VOC Applied (lbs)} = 10.64\ \textit{lbs}$$

3-1-4-3. Operational Requirements

a. All clean-up and surface preparation materials containing VOCs must be stored in a closed container. Any dirty rags or papers that are contaminated with any type of coating, clean-up material, surface preparation material, or other VOC-containing material must be stored in a closed container.

b. When cleaning paint spray gun equipment and paint lines, enclosed containers or VOC recycling equipment must be utilized. Where it is stated in the permit, low-pressure spray guns must be utilized.

c. In the case where a paint spray booth is permitted for both vehicle refinishing and miscellaneous metal coating operations, the permit specifies that a facility may not conduct both miscellaneous metal coating operations and vehicle refinishing operations on the same operating day at the same paint spray booth.

d. The permit conditions stipulate that no other paint spray booth in the Aberdeen Area can conduct miscellaneous metal coating operations when any miscellaneous metal coating operations are being performed in the paint spray booth at building 5045. The AEC for building 5045 must coordinate miscellaneous metal coating operations with other booths located on Post.

e. Records must be maintained in accordance with Section 3-1-4-2 of this chapter.

3-1-4-4. Emission Standards

a. A facility can not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972, in excess of 20 pounds per day unless the discharge is reduced by 85 percent or more overall.
b. A facility constructed prior to May 12, 1972 is limited to a discharge of VOCs less than 200 pounds per day unless the discharge is reduced by 85 percent or more overall. Table 3-1-1 lists the booths that were constructed prior to 1972.

Table 3-1-1: Paint Spray Booths Constructed Prior to 1972

MDE Registration Number	Emissions Unit Number	Building Number	Date of Installation
12-6-0159	07-00525-A06	525	1960
12-6-0162	07-00525-A04	525	1960
12-6-0163	39-02378-A01	2378	1971
12-6-0164	39-02373-A01	2373	1971
12-6-0167	06-E3525-A01	E3525	1964

c. In the case of miscellaneous metal coating, vehicle refinishing booths, and curing booths, if the coatings are in compliance with the limits listed in Table 3-1-2, 3-1-3, or 3-1-4, then the 20 or 200 pounds per day limit does not apply. However, if non-compliant coatings are being utilized, then the total VOC discharge from the facility must be below the 20 or 200 pounds per day threshold.

d. Where possible, coatings shall be purchased and used that meet the standards listed in Tables 3-1-2 and 3-1-3. To avoid having to comply with the 20 or 200 pounds per day limit, purchase compliant coatings.

Table 3-1-2: Miscellaneous Metal Coating Standards (COMAR 26.11.19.13C(1))

Coating Type	Pounds VOC Per Gallon of Coating Applied (Minus Water)	Kilograms VOC Per Liter of Coating Applied (Minus Water)
High Performance	3.5	0.42
Clear Coating	4.3	0.51
Standard	3.0	0.36

e. A facility may not use any coating to line the interior of a metal drum or pail unless the VOC content of the coating is 4.3 pounds per gallon of coating minus water, or less.

Table 3-1-3: Vehicle Refinishing Coating Standards (COMAR 26.11.19.23C(2))

Coating Type	Maximum VOC Content on or after April 15, 1996 lb/gal (kg/l)
Pretreatment	6.5 (0.78)
Precoat	5.5 (0.66)
Primer surfacer	4.8 (0.58)
Primer sealer	4.6 (0.55)
Topcoat	5.0 (0.60)
Multi-stage coating system	5.2 (0.63)
Specialty coating	7.0 (0.84)

f. When surface preparation materials are used, the paint spray booth must comply with the standards listed in Table 3-1-4.

Table 3-1-4: Surface Preparation

Surface Preparation	Maximum VOC Content lb/gal (kg/l)
Plastic Parts	1.4 (0.17)
Non-Plastic Parts	6.5 (0.78)

g. No visible emissions can be emitted from the paint spray booths.

h. Particulate matter emissions from the paint spray booths are limited to 0.03 gr/SCFD (68.7 mg/dscm). The particulate emissions from the paint spray booth must be measured or calculated monthly by each AEC. The emissions can be measured via a stack test or calculated as shown in Figure 3-1-5. Maintain a copy of all calculation or measurement records.

Figure 3-1-5: Calculation of Particulate Matter from Paint Spray Booths

Particulate Matter (PM) emissions from painting operations using spray guns are calculated by assuming 65% transfer efficiency of paint onto the coating surface based on transfer efficiency values found in Chapter 4.0 of AP-42. Therefore, 35% of the solids content of the material used is emitted to the atmosphere.

PM emissions from painting operations using brushes are zero.

$$\text{PM Emissions}\left(\frac{\text{lb}}{\text{day}}\right) = \sum\left[\text{Usage}\left(\frac{\text{gal}}{\text{day}}\right)\right] * \left[\text{Density}\left(\frac{\text{lb}}{\text{gal}}\right)\right] * \left[\text{TAP Wt \% that is PM}\right] * \left[\text{0.35 transfer efficiency}\right]$$

$$\text{PM Emissions}\left(\frac{\text{lb}}{\text{hour}}\right) = \sum\left[\text{PM Emissions}\left(\frac{\text{lb}}{\text{day}}\right)\right] * \left[\frac{\text{hours operated}}{\text{day}}\right]$$

$$\text{PM Emissions}\left(\frac{\text{grain}}{\text{ft}^3}\right) = \frac{\left[7{,}000\left(\frac{\text{grains}}{\text{lb}}\right)\right] * \left[\text{PM Emissions}\left(\frac{\text{lb}}{\text{hr}}\right)\right]}{\left[\text{Flow Rate}\left(\frac{\text{ft}^3}{\text{hr}}\right)\right]}$$

The flow rate must be measured or assumed to be the value listed in the permit or manufacturer's specifications.

$$\text{Flow rate}\left(\frac{\text{ft}^3}{\text{hr}}\right) = \left[\text{Velocity}\left(\frac{\text{ft}}{\text{min}}\right)\right] * \left[\text{Stack Height Above Ground}\left(\text{ft}\right)\right] * \left[\text{Stack Inside Diameter at Top}\left(\text{in}\right)\right] * \left[\frac{60\,\text{min}}{\text{hr}}\right]$$

3-1-4-5. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it shall be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

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3-2. Boilers

3-2-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to the operation and maintenance of boilers.

3-2-2. Background

Boilers at APG fall into one of two general classifications based on heat input capacity. These classes are: 1) boilers with a heat input capacity of 10 million Btu/hr or greater, and 2) boilers with a heat input capacity less than 10 million Btu/hr. If the boiler consumes 60 percent of its annual fuel during the period of October 31 of one year through March 31 of the following year, it is classified as a space heater, irrespective of its size. The boilers and space heaters at APG can be fired with natural gas, fuel oil, or both.

3-2-3. Policy

a. It is APG's policy to ensure that the operation and maintenance of all boilers on Post is in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to boilers:

(1) COMAR 26.11.09.05: Visible Emissions
The facility may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers.

(2) COMAR 26.11.09.07: Control of Sulfur Oxides from Fuel Burning Equipment
The facility may not burn distillate fuel (fuel oil) with a sulfur content of more than 0.3 percent, by weight.

(3) COMAR 26.11.09.08: Control of NO_x Emissions From Major Stationary Sources

(B) *General Requirements and Conditions*
The boiler operator, the person who maintains equipment and makes adjustments for efficient operation, must complete a MDE approved training course.

(E) *Requirements For Fuel-Burning Equipment With a Rated Heat Input Capacity of 100 MMBtu per hour or less*
The facility must comply with the reporting, monitoring, record keeping, and training requirements found in this section.

(F) *Requirements For Space Heaters*
The facility must comply with the reporting, record keeping, training, and planning requirements found in this section.

(K) *Reporting Requirements*
The facility must comply with the reporting and record keeping requirements found in this section.

(4) 40 CFR 60, Subpart Dc Federal New Source Performance Standards (NSPS)
The facility must comply with emissions standards, reporting, and record keeping requirements found in this regulation. This regulation applies to boilers with a hear capacity less than 100 million Btu/hour but greater than 10 million Btu/hour for which construction began after June 9, 1989.

(5) Permits to Construct
The permits to construct for the various boilers contain operating limitations, as well as other monitoring, reporting, and record keeping requirements that apply to specific boilers.

3-2-4 Requirements

There are required responsibilities, operational and monitoring requirements, record keeping, and reporting requirements, and training regulations specific to boiler operations and maintenance as outlined in the following.

3-2-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to boilers.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collect records from boilers to support the development and submission of any reports to the MDE.
(3) Respond to any additional MDE requests for information.

b. Directorate of Installation Operations (DIO)

(1) Maintain boiler operating records required for semi-annual reports to MDE and the EPA (i.e., hours of operation, pounds of steam produced, amount of fuel combusted each day).
(2) Obtain and maintain sulfur content certifications from fuel oil supplier(s).
(3) Maintain central operator training records, and coordinate with DSHE to ensure that operators are trained every three years.
(4) Maintain operations manuals and preventive maintenance plans.
(5) Ensure that maintenance logs are maintained.
(6) Ensure boilers are operated at their maximum efficiency and in compliance with this chapter.

3-2-4-2. Operational and Monitoring Requirements

a. DSHE must be notified of any proposed installation, replacement, or removal of a boiler, irrespective of the size. See section 2-3 of this regulation for further details regarding the information that needs to be provided to DSHE.

b. When installing a new boiler, boilers with low NOx emissions shall be purchased whenever possible.

c. Three boilers located at building 345 (two rated at 64 million Btu per hour heat input and one rated at 23.4 million Btu per hour heat input) and two boilers located at building E5126 (each rated at 73.1 million Btu per hour heat input) must be equipped and operated with low NOx burners and flue gas recirculation systems as specified in their permits.

d. All boilers will only burn natural gas or No. 2 fuel oil unless the facility applies for and obtains an approval or permit from the MDE to burn an alternate fuel. If a boiler needs to burn an alternate fuel, the facility must contact DSHE. DSHE will contact the MDE and receive the appropriate certifications.

e. All boilers must be operated and maintained in a manner that prevents visible emissions. No visible emissions may be discharged from the boilers. This does not apply to emissions during the following activities:

- building of a new fire
- cleaning of fires
- soot blowing
- start-up
- occasional cleaning of control equipment when the emissions are not darker in shade or appearance than that designated as No. 2 on the Ringlemann Smoke Chart or not greater than 40 percent opacity for a period or periods aggregating not more than 6 consecutive minutes in any 60 minute period

f. A certified visible emissions observer in DSHE audits the boilers annually to ensure that no visible emissions are being emitted from the boilers. DSHE follows the requirements of Method 9 observations. The policy that is followed for visible emissions at APG is as follows:

- Any observation of a stack with a 40 percent or more opacity reading is an automatic violation
- Any observation of a stack with an opacity reading between 0 and 40 percent is not necessarily a violation. The tests are conducted on six-minute cycles. If the observer views an opacity between 0 and 40 percent during the first six-minute cycle they are required to continue the observations for an additional six minutes. If the readings during the second six-minute cycle are all 0 percent, then there is no violation. Any reading above 0 percent on the second six-minute cycle is a violation.
- The visible emissions observer will enter the building or boiler room during a period of excess emissions to ensure that activities, which warrant an exemption from visible emissions, are not occurring.
- If a second six-minute reading is required, it has to be conducted immediately after the first period of observation (i.e., the observer will do at least 12 continuous minutes).

g. A combustion analysis must be performed on each boiler that is not classified as a “space heater” each calendar quarter and the combustion must be optimized based on the results of the analysis. A combustion analysis is the measurement of CO and O_2 in the flue gas at the normal operating load and calculation of minimum excess air. Operators are trained in combustion analyses and optimization on a tri-annual basis. Table 3-2-1 and 3-2-2 list the currently registered boilers that are not classified as space heaters and those that are classified as space heaters, respectively. These tables are constantly changing as APG removes, installs, and replaces boilers. Table 3-2-1 and Table 3-2-2 are as they appear in the current MDE Title V permit, issued in 2000.

Table 3-2-1: Registered Boilers Not Classified as a Space Heater

Emissions Unit Number	Emissions Unit Description	Date of Installation
E5330	(3) Edgemoor No. 2 fuel oil-fired boilers rated at 80.6 million Btu per hour heat input	1950
26-E5126-A04 & A05	(2) Union Iron Works No. 2 fuel oil-fired boilers each rated at 32.0 million Btu per hour heat input	1941
26-E3312-A02 & A03	(2) Cleaver Brooks No. 2 oil-fired boilers each rated at 29.2 million Btu per hour heat input.	1975
26-E4160-A01	(1) Cleaver Brooks No. 2 fuel oil-fired boiler rated at 10.4 million Btu per hour heat input	1977
26-E6560-A03 & A04	(2) Cleaver Brooks No. 2 fuel oil-fired boilers each rated at 10.8 million Btu per hour heat input	1979
26-E3302-A01	(1) Cleaver Brooks No. 2 fuel oil-fired boiler rated at 25.1 million Btu per hour heat input.	1984
26-E3302-A02	(1) York Shipley No. 2 fuel oil-fired boiler rated at 20.9 million Btu per hour heat input equipped with flue gas recirculation system.	1981
26-E3312-A01	(1) Cleaver Brooks No. 2 fuel oil-fired boiler rated at 33.5 million Btu per hour heat input	1988
26-E3312-A04 & A05	(2) Cleaver Brooks No. 2 fuel oil-fired boilers each rated at 33.5 million Btu per hour heat input.	1987
26-E5126-A01 & A02	(2) Cleaver Brooks natural gas/No. 2 fuel oil-fired boilers each rated at 73.1 million Btu per hour heat input equipped with low NO_x burners and flue gas recirculation.	1997
E5126-A01	(1) Cleaver Brooks No. 2 oil-fired boiler rated at 37.4 million Btu per hour.	1985
26-E4160-A02 & A03	(2) Cleaver Brooks No. 2 fuel oil-fired boilers each rated at 12.5 million Btu per hour heat input.	1990 1994
26-00345-A01	(1) Cleaver Brooks natural gas/No. 2 oil-fired boiler rated at 23.4 million Btu per hour heat input equipped with low NO_x burners and flue gas recirculation system.	1995
26-00345-A02 & A03	(2) Cleaver Brooks natural gas/No. 2 fuel oil-fired boilers rated at 64 million Btu per hour heat input equipped with low NO_x burners and flue gas recirculation system.	1994
26-04600-A06 thru A08	(3) Cleaver Brooks natural gas/No. 2 oil-fired boilers each rated at 20.9 million Btu per hour heat input equipped with low NO_x burners and flue gas recirculation system.	1995
26-05014-A01 & A02	(2) H.B. Smith natural gas/No. 2 fuel oil-fired boilers rated at 13.5 million Btu per hour heat input.	1991
26-03062-A01 & A02	(2) Cleaver Brooks natural gas/No. 2 fuel oil-fired boilers each rated at 12.5 million Btu per hour heat input.	1988

Table 3-2-2: Registered Boilers Classified as Space Heaters

Emissions Unit Number	Emissions Unit Description	Date of Installation
26-E4225-A01 thru A03	(3) Titusville No. 2 fuel-oil boilers each rated at 5.01 million Btu per hour heat input	1973
26-E2100-A01 & A02	(2) Kewanee No. 2 fuel oil-fired boilers each rated at 5.0 million Btu per hour heat input	1973
26-E1958-A01	(1) Continental No. 2 fuel oil-fired boiler rated at 1.67 million Btu per hour heat input	1973
26-E2100-A03	(1) Kewanee No. 2 fuel oil-fired boiler rated at 2.092 million Btu per hour heat input	1973
26-E4110-A01	(1) Crane No. 2 fuel oil-fired boiler rated at 1.08 million Btu per hour heat input	1973
26-E1930-A01	(2) Kewanee No. 2 fuel oil-fired boilers each rated at 3.16 million Btu per hour heat input	1973 1979
26-E5828-A01 & A02	(2) Bryan No. 2 fuel oil-fired boilers each rated at 9.0 million Btu per hour heat input	1977
26-E1950-A01	(1) Anesteam No. 2 fuel oil-fired boiler rated at 1.89 million Btu per hour heat input	1977
26-E4585-A01	(1) Burnham No. 2 fuel oil-fired boiler rated at 1.16 million Btu per hour heat input	1977
26-E6651-A01	(1) National Radiator natural gas-fired boiler rated at 1.0 million Btu hour heat input	1977
26-E1574-A01 thru A03	(3) Cleaver Brooks No. 2 fuel oil-fired boilers each rated at 6.27 million Btu per hour heat input	1977
26-E1344-A01	(1) H.B. Smith No. 2 fuel oil-fired boiler rated at 1.51 million Btu per hour heat input	1979
26-E4902-A01	(1) Cleaver Brooks No. 2 fuel oil-fired boiler rated at 2.9 million Btu per hour heat input	1979
26-E2194-A01	(1) Continental No. 2 fuel oil-fired boiler rated at 1.89 million Btu per hour heat input	1979
26-E5951-A01	(1) Pacific National Crane No. 2 fuel oil-fired boiler rated at 1.66 million Btu per hour heat input	1979
26-E4651-A01	(1) Cleaver Brooks No. 2 fuel oil-fired boiler rated at 2.51 million Btu per hour heat input	1990
26-E6601-A01	(1) American Standard natural gas-fired boiler rated at 1.80 million Btu per hour heat input	1987
26-E5664-A01	(1) Burnham No. 2 fuel oil-fired boiler rated at 2.12 million Btu per hour heat input	1996
26-E3832-A02	(1) Peerless No. 2 fuel oil-fired boiler rated at 1.82 million Btu per hour heat input	1994
26-E4301-A01 thru A03	(3) Burnham No. 2 fuel oil-fired boilers each rated at 9.614 million Btu per hour heat input	1990
Miscellaneous, Aberdeen Area	Consolidated natural gas-fired boilers rated between 1-10 million Btu per hour heat input	Various

h. If a boiler, which is currently classified as a space heater, no longer qualifies as a space heater, the facility must inform DSHE. DSHE will then inform the MDE no later than 60 days after the date that the fuel-burning equipment did not qualify. Once the boiler is no longer a space heater, it must meet the applicable fuel-burning equipment Reasonably Available Control Technology (RACT) requirements, the lowest emissions limit that the boiler is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.

3-2-4-3. Record Keeping and Reporting Requirements

a. A facility must ensure that the fuel is in compliance with the sulfur in fuel limitation (0.3% by weight) and must be verified by written certification obtained at least annually from fuel supplier(s).

b. DIO must maintain the fuel certifications and they must be made available to the MDE upon request. DIO must submit the certifications to DSHE semi-annually to be included in the boiler reports.

c. Each boiler must have operations manuals and preventive maintenance plans. These plans must be maintained on site for at least five years and be available for inspection by the MDE.

d. Logs of all incidental and scheduled maintenance performed on the boilers must be maintained on site for at least a five-year period. These logs must be made available to the MDE upon request. Figure 3-2-1 lists a suggested timeline for maintenance and items that should be included in a maintenance log.

Figure 3-2-1: Boiler Maintenance Log Program

The following information is adapted from:

Boiler Logs Can Reduce Accidents
by William H. Axtman
President of Gray Gull Associates, Inc.
Retired executive director of the American Boiler Manufacturers Association

The following maintenance items, as appropriate to the specific boiler system, need to be considered for implementation on a regular basis (e.g., daily, weekly, monthly, semiannually, annually). A checklist of the items should be incorporated into a maintenance log with provisions for checking off the item for the appropriate period. A separate log sheet is suggested for each period. The log sheets can be filed in a loose-leaf binder and must be retained as a permanent maintenance record.

The log sheets can be used as a handy check-off system when establishing a facility maintenance program. In all cases the equipment manufacturer's recommendations should be followed.

DAILY
Blow down and test low water cutoffs of steam boilers (once per shift for high pressure)
Blow down gage glasses (steam)
Blow down make up feeder (low pressure steam)
Blow down boiler (steam)
Check boiler control linkage
Check boiler and system for leaks
Check burner flame

WEEKLY
Check compressor(s) lubricating oil level (control and atomizing)
Check flame signal strength for both pilot and main flame, and record readings
Check flame failure cutoff and timing
Check pilot and main flame fuel shutoff valve closing
Check igniter and burner operation
Check level in chemical treatment tank

MONTHLY
Check compressor(s) air filter, and clean or replace as required
Check boiler water treatment test results received from treatment company, adjust treatment as required
Lubricate motor and equipment bearings
Test fan and air pressure interlocks
Check main burner fuel safety shutoff valves for leakage
Check low fire start interlock
Check high pressure/temperature interlocks
Test low water cutoffs (hot water)
For oil -- test pressure and temperature interlocks
For gas -- test high and low gas pressure interlocks
Manually lift safety/safety relief valves and check operation

SEMIANNUALLY
Inspect burner components
Check flame failure system components
Check piping and wiring of all interlocks and shutoff valves
Recalibrate all indicating and recording gages and instruments
Perform a slow drain test for low water cutoffs (steam)
Check combustion control system
For oil -- check atomizers and strainers
Test boiler safety/safety relief valves in accordance with ASME Boiler and Pressure Vessel Code, Sections VI and VII

ANNUALLY
Perform the SEMIANNUAL maintenance procedures
Check all equipment coils and diaphragms
Perform a pilot turndown test
Recondition or replace low water cutoff
For gas -- check drip leg and gas strainer
Clean boiler firesides
Drain boiler, open manholes and hand holes, and clean watersides
Have boiler inspected by a commissioned inspector
Clean burner and gans
Replace gaskets
Leak-test all fuel valves
Test operation of all controls and safety devices
Have fuel-burning system adjusted using combustion test instruments

AFTER EACH PERIOD
Make a record of all maintenance and parts replacement in the maintenance log

e. Each facility must maintain a record of the training program attendance for each operator on site for a period of at least five years. Training requirements are specified in section 3-2-4-4. A copy of all training records must be forwarded to DSHE for the air compliance files.

f. Incidents of visible emissions must be reported, in writing, to the Maryland Department of the Environment within five days of a request by the Department. If visible emissions are observed, the boiler must be shutdown immediately, if possible, for repair. The visible emissions observations must be reported immediately to DSHE. DSHE must report the incident to the MDE. Once reported, the MDE may require certain actions to be conducted.

g. All correspondence between a facility and the MDE must be forwarded to DSHE for the air compliance files. Likewise, any applicable correspondence between DSHE and the MDE will be forwarded to the facility for the facility's records.

h. For boilers which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 million Btu per hour (29 megawatts) or less, but greater than or equal to 10 million Btu per hour (2.9 megawatts) (listed in Table 3-2-3), DSHE must submit semi-annual reports to the MDE. DSHE will contact the appropriate persons in January and July of each year to collect the following information for the preceding six-month period:

- Hours of operation
- Pounds of steam produced
- Amounts of fuel combusted each day
- Written certification from the fuel oil supplier(s) stating that the oil complies with the sulfur content restrictions
- A certified statement from the facility stating that the fuel supplier certifications submitted in the report represent all of the fuel combusted during the 6-month reporting period

Table 3-2-3: Boilers Requiring Semi-Annual Report

Registration Number	Building Location	Type of Boiler	Rated (MBTU/hr)
26-00345-A01 through A03	345	(2) Cleaver Brooks (1) Cleaver Brooks	64 23.4
26-05014-A01 and A02	5014	(2) H.B. Smith	13.5
26-4600-A06 through A08	4600	(3) Cleaver Brooks	21
26-E4160-A02 and A03	E4160	(2) Cleaver Brooks	12.6
26-E5126-A01 and A02	E5126	(2) Cleaver Brooks	73.1
025-5-0127 through 0129	ACANF	(3) Cleaver Brooks	21

i. Emissions from all boilers will be calculated by DSHE and included in the Annual Emissions Certification Report. An example calculation for calculating emissions from fuel burning equipment is demonstrated in Table 2-1.

3-2-4-4. Training Requirements

a. All boiler operators must attend an operator training program on combustion optimization every three years. The training program may be one sponsored by the MDE, the EPA, or equipment vendors that are approved by the MDE.

b. DSHE must be notified of any training and a copy of the training certifications shall be forwarded to DSHE. Arrangements for training can also be made through DSHE.

3-2-4-5. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it shall be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

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3-3. Generators

3-3-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to operation and maintenance of generators.

3-3-2. Background

Generators are stationary internal combustion engines or stationary combustion turbines used to produce mechanical or electrical energy. In the past, APG has only registered and permitted generators that are greater than 1,000 brake horsepower. There are six permitted engines at Aberdeen Area and nine at the Edgewood Area. The requirements for combustion engines vary based on their horsepower capabilities, capacities, use, and potential to emit.

3-3-3. Policy

a. It is APG's policy to ensure that the operation and maintenance of all generators on Post is in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to generators:

(1) 40 CFR 72.2: Acid Rain Program General Provisions
Capacity factor is calculated either by:

- the ratio of a unit's actual annual electric output (expressed in MWe-hr) to the unit's nameplate capacity times 8760 hours, or
- the ratio of a unit's annual heat input (in million British thermal units or equivalent units of measure) to the unit's maximum design heat input (in million British thermal units per hour or equivalent units of measure) times 8,760 hours.

(2) COMAR 26.11.09.05: Visible Emissions
The facility may not cause or permit the discharge of emissions, other than water in an uncombined form, which is visible to human observers. The facility may not exceed the emissions limits listed in COMAR 26.11.09.05(B) for both idle and operating mode unless the facility is operating under an exempt condition.

(3) COMAR 26.11.09.07A(2)(b): Sulfur Content Limitations for Fuel
A person may no burn, sell, or make available for sale distillate fuel oils with a sulfur content by weight in excess of 0.3 percent.

(4) COMAR 26.11.09.08: Control of NOx Emissions for Major Stationary Sources
If a generator has a capacity factor less than 15 percent, there are requirements for testing, training, and reporting, while combustion turbines greater than 15 percent have emissions limitations that apply.

(5) COMAR 20.79: Applications Concerning the Construction or Modifications of Generating Stations and Overhead Transmissions Lines by a Non-Utility Generator
A non-utility generator must apply for a Certificate of Public Convenience and Necessity (CPCN) or a waiver for a CPCN from the Public Service Commission for the construction of

a generating station or an overhead transmission line, or modification to an existing electric generating station or an existing overhead transmission line in Maryland.

3-3-4. Requirements

There are requirements specific to generators with respect to responsibilities, permitting, operation, monitoring, record keeping, and reporting as outlined in the following.

3-3-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to generators and combustion engines.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collection of all necessary records and information for reports.
(3) Notify facilities if new regulations are promulgated.
(4) Advise facilities on the process for applying to the Maryland Public Service Commission to obtain a Certificate of Public Convenience and Necessity (CPCN) or a waiver from the CPCN.
(5) Calculate emissions and capacity factor annually and report to the MDE. Notify the facilities if the capacity is significantly different than previous years causing other regulations to be applicable.
(6) Notify and receive approval from the MDE if a generator needs to operate longer than the hours allotted in the permit.
(7) Forward all appropriate correspondence and permits to the facilities for facility records.

b. Directorate of Installation Operations (DIO)

(1) Maintain fuel certification records and ensure that the fuel is within all regulatory limitations.
(2) Ensure that the generators are operating efficiently and in compliance with this regulation.
(3) Ensure that all appropriate records are being maintained. Make the records available upon request.
(4) Notify DSHE of any proposed installation of a combustion engine, irrespective of the size.
(5) Contact DSHE if a generator needs to operate for a longer period of time than the permit allows.
(6) Ensure that all operations are properly trained and that certifications are up-to-date.

c. Activity Environmental Coordinator

(1) Ensure that the generators are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that all appropriate records are being maintained. Make the records available upon request.
(3) Notify DSHE of any proposed installation of a combustion engine, irrespective of the size.
(4) Contact DSHE if a generator needs to operate for a longer period of time than the permit allows.
(5) Ensure that all operations are properly trained and that certifications are up-to-date.

d. Contractors, Governmental Owned Contractor Operated Facilities (GOCO)

(1) Ensure that the generators are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that all appropriate records are being maintained. Make the records available upon request.
(3) Notify DSHE of any proposed installation of a combustion engine, irrespective of the size.
(4) Contact DSHE if a generator needs to operate for a longer period of time than the permit allows.
(5) Ensure that all operations are properly trained and that certifications are up-to-date.

e. Non-GOCO Contractors

(1) Ensure that the generators are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE via the contractor's COR.
(2) Ensure that all appropriate records are being maintained. Make the records available upon request.
(3) Notify DSHE via the contractor's COR of any proposed installation of a combustion engine, irrespective of the size.
(4) Contact DSHE via the contractor's COR if a generator needs to operate for a longer period of time than the permit allows.
(5) Ensure that all operations are properly trained and that certifications are up-to-date.

f. Generator Operators

(1) Ensure that the generators are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to the appropriate AEC.
(2) Maintain all appropriate records.
(3) Attend combustion optimization training every three years.

3-3-4-2. Permitting Requirements

a. Appendix B, Section I (E) of this regulation lists the exemptions for permits to construct with respect to stationary internal combustion engines. All engines less than 500 brake horsepower as well as engines less than 1,000 brake horsepower that operate less than 2,000 hours per year do not need to be registered. If APG installs more than one engine over a five-year period, these exemptions are not available if the total potential to emit (PTE) from all the engines installed in this period exceeds 25 tons per year (TPY). This most likely is the case at APG unless there is a Federally Enforceable State Operating Permit (FESOP) restriction on the number of operating hours. Unless there is an enforceable permit limitation on the number of hours or the fuel consumption, the PTE from almost any one medium or large engine by itself will most likely exceed 25 TPY. For example, one 184 HP engine with no operational limitations on the hours (operating 8,760 hours/year) will have a PTE of 25 TPY.

b. DSHE must be notified of any proposed installation of a generator, irrespective of the size. DSHE must keep a record of all new sources of NOx so as to comply with New Source Review (NSR). See section 2-3 of this regulation for further details regarding the information that needs to be provided to DSHE.

c. A source applying to MDE for a permit to construct must also apply to the Maryland Public Service Commission to obtain a Certificate of Public Necessity (CPCN) or a waiver from CPCN for all generators. The requirement for a CPCN or a CPCN waiver applies even if the generator

will only be used for captive internal use under emergency conditions and will not sell power to the grid. DSHE will assist a facility with this application process, as there is specific language and requirements that must be included in the application.

d. Fifteen generators are currently registered at APG. The permit to construct or registration permits restrict the operating hours of a particular engine. Table 3-3-1 lists the engines currently permitted at APG and their limitations on operating hours. Any new generators that are non-exempt will have to be added to the Title V permit in addition to applying for a permit to construct.

Table 3-3-1: Currently Permitted Engines

Building	Permit Number	Equipment	Model Number	KW	Brake HP	Limit on Hours
0316	12-9-0225	Kohler Power Systems	750ROZD		1232	408
0394	12-9-0227	Caterpillar	3512	1000	1340	120
0394	12-9-0228	Caterpillar	3512	1000	1340	120
0328	12-9-0229	Caterpillar	3508	800	1072	120
4600	12-9-0277	Caterpillar	3516	1400	1877	400 total
4600	12-9-0276	Caterpillar	3516	1400	1877	
E3081	12-9-0230	Caterpillar	D399		1073	None
E3150	12-9-0279	Cummins, 12 cyl Katolight	KTA 38-G4		1350	408
E3150	12-9-0280	Cummins, 12 cyl Katolight	KTA38-G4		1350	408
E3150	12-9-0278	Cummins, 12 cyl Katolight	KTA38-G4		1350	408
E3300	12-9-0231	Cummins	KTA50-G1		1490	312
E3549	12-9-0232	Cummins	KTA38-G1		1135	312
ACANF	12-9-0293	Cummins		1750	2346	300 total
ACANF	12-9-0294	Cummins		1750	2346	
ACANF	12-9-0295	Cummins		1750	2346	
ACANF	12-9-0296	Cummins		1750	2346	

3-3-4-3. Operational Requirements

a. All permitted generators need to be operated within the limitations provided in Table 3-3-1. If the generator needs to be operated longer than the period provided in the permit, the source must obtain approval from the MDE. If this is necessary, the AEC for the generator must contact DSHE. DSHE will correspond with the MDE to obtain approval for the extension of the hours. All correspondence with the MDE will be forwarded to the appropriate AEC.

b. Annually, the total emissions from each of the generators must be reported. DSHE must obtain or calculate the emissions annually as required and report them to the MDE. The emissions from a given generator can be obtained from the manufacturer, through testing, or estimated using AP-42. Obtaining the data from the manufacturer is the preferred alternative. Figure 3-3-1 demonstrates how to calculate the emissions using the factors found in AP-42.

c. If a facility is applying for a permit for a new generator, the facility must estimate the emissions. The facility may either obtain the emissions information from the manufacturer for the specified generator or estimate them by using AP-42. Figure 3-3-1 demonstrates how to calculate the expected emissions using the factors in AP-42.

Figure 3-3-1: Estimating Emissions from Generators

Calculations of NOx are the primary concern of stationary combustion engines at APG due to the possibilities of PTE and NSR.

Emission factors are located in Table 3.4-1 of AP-42 for large engines and Table 3.3-1 of AP-42 for small engines. The emissions factors for common pollutants calculated at APG are listed below.

Pollutant	Large Stationary Diesel Fuel Engine (greater than or equal to 600 hp)		Small Stationary Diesel Fuel Engine (less than 600 hp)	
	(lb/hp-hr) (power ouput)	(lb/MMBtu) (fuel input)	(lb/hp-hr) (power ouput)	(lb/MMBtu) (fuel input)
NOx	0.024	3.2	0.031	4.41
CO	0.0055	0.85	0.00668	0.95
SOx	0.000243	0.0303	0.00205	0.29
PM	0.0007	0.1	0.0022	0.31

$$\text{Annual Emission Rate}\left(\frac{\text{tons}}{\text{year}}\right) = \frac{\left(\text{Emission Factor}\left(\frac{\text{lb}}{\text{MMBtu}}\right)\right) * \left(\text{Horsepower of generator}\right) * \left(0.0025\left(\frac{\text{MMBtu}}{\text{hr}/\text{hp}}\right)\right) * \left(\frac{\text{hours operated}}{\text{year}}\right)}{\left(\frac{\text{2,000 lbs}}{\text{ton}}\right)}$$

$$\text{Annual Emission Rate}\left(\frac{\text{tons}}{\text{year}}\right) = \frac{\left(\text{Emission Factor}\left(\frac{\text{lb}}{\text{hp - hr}}\right)\right) * \left(\text{Horsepower of generator}\right) * \left(\frac{\text{hours operated}}{\text{year}}\right)}{\left(\frac{\text{2000 lbs}}{\text{ton}}\right)}$$

$$\text{Daily Emission Rate}\left(\frac{\text{lbs}}{\text{day}}\right) = \frac{\left(\text{Annual Emission Rate}\right) * \left(\frac{\text{2,000 lbs}}{\text{ton}}\right)}{\text{Number of days operated}}$$

d. Emissions standards based on the Ringlemann Smoke Chart exist when a generator is operating at idle conditions versus normal conditions. The facility may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity or darker in shade or appearance than that designated as No. ½ on the Ringelmann Smoke Chart. For the purpose of this section, idle means the condition during which the engine is not performing the useful net work that enables the piece of equipment to accomplish its designated purpose. This emissions standard does not apply to the following cases:

- For a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system
- Emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:
  - Engines that are idled continuously when not in service: 30 minutes
  - All other engines: 15 minutes
- While maintenance, repair, or testing is being performed by qualified mechanics

e. During regular operation, no visible emissions may be discharged from the generator. This does not apply while maintenance, repair, or testing is being performed by qualified mechanics.

f. A generator's capacity factor affects the emissions regulations. All currently registered combustion turbines and engines at APG have a capacity factor less than 15 percent. If, however,

a facility ever has a combustion turbine with a capacity factor greater than or equal to 15 percent, than the turbine must meet an hourly average NOx emission rate of not more than 42 ppm when burning gas, 65 ppm when burning fuel oil (dry volume at 15 percent oxygen) or meet applicable Prevention of Significant Deterioration limits, whichever is more restrictive.

3-3-4-4. Monitoring Requirements

a. Operators should periodically monitor for visible emissions when the generator is in operation. If visible emissions are observed, the generator must be tweaked to eliminate the emissions or shutdown immediately for maintenance or repair, if possible. If visible emissions are observed, they must be reported immediately to DSHE.

b. The facility must ensure that the fuel is in compliance with the sulfur limitations (0.3% by weight). When fuel is delivered, a certification from the fuel supplier must be obtained detailing the specifications of the fuel. DIO will obtain the certification when the fuel is delivered.

c. Each individual that operates any generator, except combustion turbines, must attend an operator training program at least once every three years, on combustion optimization that is sponsored by the Department, the EPA, or an equipment vendor. DSHE must be notified of any training and a copy of training certifications must be forwarded to DSHE. Arrangements for training can also be made through DSHE. There are no specific training requirements for individuals that operate combustion turbines.

d. A generator's capacity factor is an annually calculated value. All currently registered combustion turbines and engines at APG have a capacity factor less than 15 percent. If the generator has a capacity factor less than 15 percent and operates more than 500 hours during a calendar year, a combustion analysis needs to be performed and the combustion optimized at least once annually by the operators and the maintenance personnel. A combustion analysis is the measurement of CO and O_2 in the flue gas at the normal operating load and calculation of minimum excess air. Operators and maintenance personnel are trained in combustion analyses and optimization on a tri-annual basis.

e. Annually, the capacity factor must be calculated for each registered generator and submitted to the MDE in writing. This will be calculated by DSHE via the method outlined in Figure 3-3-2. The capacity factor will be included in the Annual Emissions Certification that is submitted to the MDE. DSHE will notify any facility if the calculated capacity factor is significantly different than the values from previous years causing other regulations to apply to the generator.

Figure 3-3-2: Calculation of a Generator's Capacity Factor

There are three ways to calculate a generator's capacity factor. The first two methods are found in 40 CFR 72.2. The third method is used at APG for registered generators in operation and was approved by the MDE as another acceptable method.

Method 1:

$$\text{Capacity Factor (\%)} = \left(\frac{\text{Unit's Annual Electric Output (MWe - hr)}}{\text{Unit's Nameplate Capacity (MWe)} * \frac{8{,}760 \text{ hours}}{\text{year}}} \right) * 100 (\%)$$

Method 2:

$$\text{Capacity Factor (\%)} = \left(\frac{\text{Unit's Annual Heat Input (MBTU)}}{\text{Unit's Maximum Design Heat Input (MBTU)} * \frac{8{,}760 \text{ hours}}{\text{year}}} \right) * 100 (\%)$$

Method 3:

$$\text{Capacity Factor (\%)} = \left(\frac{\frac{\text{hours operated}}{\text{year}}}{\frac{8{,}760 \text{ hours}}{\text{year}}} \right) * 100 (\%)$$

3-3-4-5. Record-keeping Requirements

a. Each generator must maintain hours of operation and fuel use records for a period of five years. The records must be maintained on site as well as by the AEC. The records must be made available upon request. DSHE will collect the records annually for the calculations for the Emissions Certification Report.

b. The capacity factor will be calculated by DSHE and reported to the MDE in writing annually via the Annual Emissions Certification Report. Records of the capacity factor will be maintained by DSHE.

c. A copy of the annual fuel supplier certifications stating that the fuel oil is in compliance with sulfur limitations must be maintained for at least five years. These records will be maintained by the DIO. DIO shall make the certification available to the MDE upon request.

d. If a combustion analysis is conducted on a generator, the results will be maintained at the site for at least 2 years. These records must be available to the MDE and the EPA upon request.

e. Each facility must maintain a record of the training program attendance for each operator at the site. A copy of all training records shall be forwarded to DSHE for the air compliance files.

3-3-4-6. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

c. If the emissions standards are exceeded, the engine must be immediately shut-down, if possible.

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3-4. Storage Tanks

3-4-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with Federal and State of Maryland are regulations with respect to gasoline storage tanks. Other regulation pertaining to tank tightness, materials of construction, etc also impact storage tanks but are not the subject of this regulation.

3-4-2. Background

There are many types of storage tanks located at APG. Depending on the size, some tanks require Stage I Vapor Recovery Systems, others require Stage II Vapor Recovery Systems, and some require no vapor recovery system. The criterion for which a vapor recovery system, if any, is required is based on the size of the tank and the amount of throughput each month; see Section 3-4-4-2 for more information. Stage II Vapor Recovery Systems requirements vary based on the brand and model of the recovery system.

There are two types of vapor recovery systems employed for gasoline storage tanks; Stage I and Stage II. Stage I recovery collects vapors from the fuel storage tank during filling operations from a tanker truck. The vapors contained within the storage tank are physically displaced by the incoming liquid forcing them into the tanker truck. The vapors are removed from the tanker truck upon its return to the fuel terminal and processed.

A Stage II Vapor Recovery system is a system at a gasoline dispensing facility that is designed, installed, and used to collect and recover gasoline vapors displaced from a motor vehicle's tank when gasoline is dispensed. The Stage II Vapor Recovery System collects the vapors at the vehicle's fill pipe and returns them to the underground storage tank. After the Stage II Vapor Recovery System has collected the vapors, they are stored in the underground storage tanks until the fuel delivery truck can collect them via the Stage I system described above.

There are three types of Stage II vapor recovery systems:

- Vapor balance system use the pressure generated in a vehicle tank by incoming fuel and the negative pressure in the gasoline storage tank to recover vapors displaced when gasoline is dispensed.
- Vapor assist systems Type 1 use a mechanical device and the flow of gasoline to generate a vacuum, the magnitude of which is related to the volume of gasoline or an electromechanical device which collects gasoline vapors displaced when gasoline is dispensed
- Vapor assist systems Type 2 provide a vacuum from a centrally located pump for all gasoline dispensers at the facility and are initiated by a trigger in the nozzle. This system is commonly referred to as a "Healy System."

3-4-3. Policy

a. It is APG's policy to ensure that the operation of storage tanks on Post is in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to storage tanks:

(1) COMAR 26.11.13: Control of Gasoline and VOCs Storage and Handling
In this chapter, COMAR 26.11.13.04C is applicable to Aberdeen Proving Ground, which discusses small storage tank loading operations and requirements for Stage I Vapor Recovery Systems.

(2) COMAR 26.11.24: Stage II Vapor Recovery Systems
All storage tanks at Aberdeen Proving Ground must comply with this chapter of the regulations unless the tank is exempt as listed in COMAR 26.11.24.02C. At APG exempt tanks include:

- Gasoline dispensing facility (permit to construct issued after November 15, 1990) that has a total gasoline storage capacity of less than 2,000 gallons
- Gasoline dispensing facility (permit to construct issued prior to November 15, 1990) where the average monthly gasoline throughput during calendar years 1990 and 1991 was less than 10,000 gallons

Exempt systems must only comply with COMAR 26.11.24.07D whereas non-exempt systems must comply with all of COMAR 26.11.24.

(3) Permits to Construct
The permits to construct for the various storage tanks contain specific operational requirements that apply to that tank. COMAR 26.11.24 was updated April 15, 2002; therefore, some new requirements that apply to specific tanks may not necessarily be listed in the permit conditions if it was permitted prior to this date. The permits shall be used in conjunction with all applicable regulations.

3-4-4. Requirements

There are many requirements for storage tanks with respect to permitting, facility operation, testing, test failures, inspections, training, record keeping, and reporting as outlined in the following.

3-4-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to storage tanks located at APG.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collect all necessary records and information for reports.
(3) Periodically review records of tests performed to ensure that APG is in compliance at all facilities.
(4) Notify the MDE at least 21 days before any scheduled vapor system tests.
(5) Forward all test results to the MDE.
(6) Notify the MDE in writing of any vapor system test failures and the rescheduled test date.
(7) Notify the MDE within 72 hours following the repair or replacement of any defective equipment found in an MDE inspection.
(8) Coordinate appropriate training classes when needed.
(9) Forward all correspondence with the MDE to the facilities for their records.
(10) Maintain a copy of all appropriate records. Ensure that all appropriate records are being maintained at the facilities. Make records available upon request.

b. Activity Environmental Coordinator

(1) Ensure that the storage tank is within all limitations and conditions contained within this chapter, State and Federal Regulations, and any permits. If any deviations are observed, report immediately to DSHE.
(2) Coordinate appropriate vapor system testing through DIO. Notify DSHE 28 days before any scheduled test.
(3) Ensure that the contractor/persons conducting vapor system testing provide a protocol for the test(s) being conducted.
(4) Forward all test results to DSHE. In the case of a test failure, notify DSHE of the rescheduled test date.
(5) Ensure that operators are conducting all necessary tests and inspections.
(6) Notify DSHE within 48 hours following the repair or replacement of any defective equipment found during an inspection by the MDE.
(7) Ensure that all employees have proper training.
(8) Ensure that all appropriate records are being maintained. Make any records available upon request.

c. Contractors, Governmental Owned Contractor Operated Facilities (GOCO)

(1) Ensure that the storage tank is within all limitations and conditions contained within this chapter, State and Federal Regulations, and any permits. If any deviations are observed, report immediately to DSHE.
(2) Coordinate appropriate vapor system testing through DIO. Notify DSHE 28 days before any scheduled test.
(3) Ensure that the contractor/persons conducting vapor system testing provide a protocol for the test(s) being conducted.
(4) Forward all test results to DSHE. In the case of a test failure, notify DSHE of the rescheduled test date.
(5) Ensure that operators are conducting all necessary inspections.
(6) Notify DSHE within 48 hours following the repair or replacement of any defective equipment found during an inspection by the MDE.
(7) Ensure that all employees have proper training.
(8) Ensure that all appropriate records are being maintained. Make any records available upon request.

d. Non-GOCO Contractors

(1) Ensure that the storage tank is within all limitations and conditions contained within this chapter, State and Federal Regulations, and any permits. If any deviations are observed, report immediately to DSHE via the contractor's COR.
(2) Coordinate appropriate vapor system testing through DIO via the contractor's COR. Notify DSHE via the contractor's COR 28 days before any scheduled test.
(3) Ensure that the contractor/persons conducting vapor system testing provide a protocol for the test(s) being conducted.
(4) Forward all test results to DSHE via the contractor's COR. In the case of a test failure, notify DSHE via the contractor's COR of the rescheduled test date.
(5) Ensure that operators are conducting all necessary inspections.
(6) Notify DSHE via the contractor's COR within 48 hours following the repair or replacement of any defective equipment found during an inspection by the MDE.
(7) Ensure that all employees have proper training.
(8) Ensure that all appropriate records are being maintained. Make any records available upon request.

e. Storage Tank/Facility Operators

(1) Ensure that the storage tank is within all limitations and conditions contained within this chapter, State and Federal Regulations, and any permits. If any deviations are observed, report immediately to the appropriate AEC.
(2) On storage tanks equipped with Stage II Vapor Recovery Systems, conduct all necessary tests and inspections.
(3) Ensure that all employees are properly trained.
(4) Maintain appropriate records. Make the records available upon request.

3-4-4-2. General Requirements

a. State II vapor recovery systems are required for all gasoline storage tanks at APG except under certain circumstances. Circumstances exempting tanks from Stage II vapor recovery are:

(1) New gasoline dispensing facilities with total gasoline storage capacity less than 2,000 gallons for which a permit to construct was issued after November 15, 1990 and
(2) Existing gasoline dispensing facilities where the average monthly gasoline throughput during calendar years 1990 and 1991 was less than 10,000 gallons for which a permit to construct was issued prior to November 15, 1990.

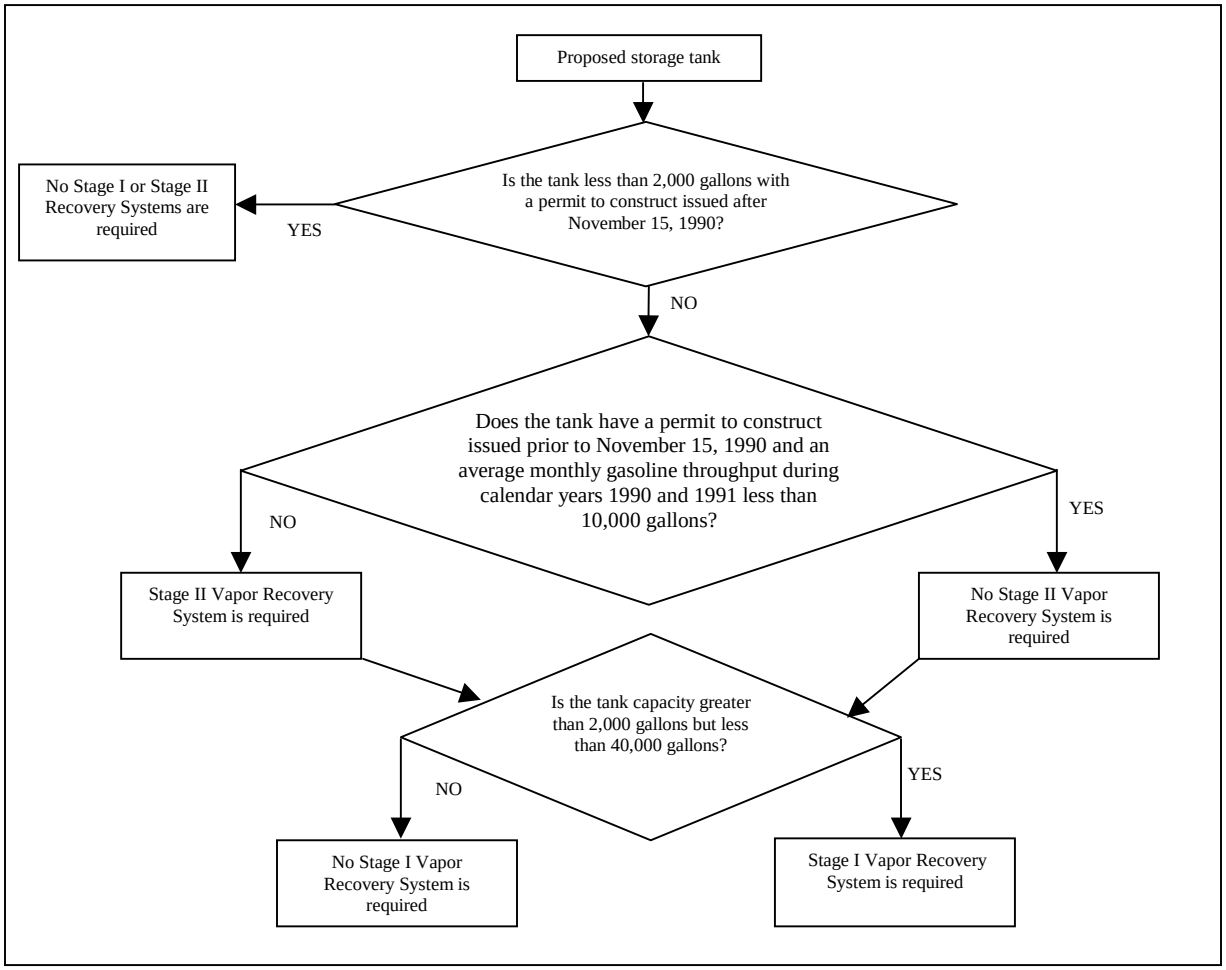
Table 3-4-1 lists the storage tanks currently permitted at APG and the type of recovery system with which they are equipped.

Table 3-4-1: Storage Tanks with Vapor Recovery Systems at APG

MDE Registration Number	Emissions Unit Number	Bldg #	Size (gal)	AST/UST	Date of Installation	Stage I and/or Stage II	Title V?
12-9-0151	07-E1464-A01	E1464	1,500	AST	1996	I	Y
12-9-0151	26-E2172-A01	E2172	2,000	UST	1995	I	N
12-9-0151	26-E4010-A01	E4010	12,000	UST	1996	I & II	N
12-9-0151	26-E4010-A02	E4010	12,000	UST	1996	I & II	N
12-9-0151	26-E4010-A03	E4010	12,000	UST	1996	I & II	N
12-9-0151	26-E4015-A01	E4015	20,000	UST	1995	I & II	Y
12-9-0152	07-00337-A01	337	1,000	UST	1995	I	Y
12-9-0152	07-00421-A01	421	10,000	UST	1993	I &II	Y
12-9-0152	26-00628-A01	628	550	AST	1996	I	Y
12-9-0152	03-1102A-A01	1102	300	AST	1994	I	Y
12-9-0152	26-02514-A01	2514	10,000	UST	1991	I & II	N
12-9-0152	26-02514-A02	2514	10,000	UST	1991	I & II	N
12-9-0152	26-02514-A03	2514	10,000	UST	1991	I & II	N
12-9-0152	26-03410-A01	3410	250	AST	1993	I	N
12-9-0152	26-04029-A03	4029	20,000	UST	1993	I & II	Y
12-9-0152	26-04029-A05	4029	20,000	UST	1993	I & II	Y

b. If a system without a vapor recovery system or with a Stage I Vapor Recovery System exceeds an average monthly gasoline throughput of 10,000 gallons per month during any calendar year, the facility must install a Stage II Vapor Recovery system within 1 year. If this occurs, the AEC needs to contact DSHE to ensure that the proper steps are followed and that the system obtains the appropriate permits. Figure 3-4-1 describes the recovery systems requirements for storage tanks.

Figure 3-4-1: Recovery Systems Requirements



3-4-4-3. Facility Requirements

a. A gasoline dispensing facility that is equipped with only Stage I Vapor Recovery or no vapor recovery system has no specific facility requirements.

b. A gasoline dispensing facility that is equipped with a Stage II Vapor Recovery system must display specific instructional signs in conspicuous locations at the facility. The instructional signs must include:

- Instructions, with illustrations, on how to insert the nozzle, dispense gasoline, and how to remove the nozzle
- A warning against attempts to continue refueling after automatic shut-off of the gasoline – topping off
- MDE's toll free telephone number that may be used for complaints or comments concerning the use of the Stage II Vapor Recovery systems (1-800-633-6101)

3-4-4-4. Testing Requirements

a. There are no vapor testing requirements required for a system equipped with only a Stage I Vapor Recovery System or no vapor recovery system.

b. Table 3-4-2 outlines the required testing frequency, type of test, required protocol and test purpose for Stage II systems. The test protocols referred to in Table 3-4-2 were developed by the California Air Resources Board (CARB) and have been adopted by MDE. Appendix G contains each of the test protocols identified in the table.

Table 3-4-2: Testing Requirements for Stage II Vapor Recovery Systems for Underground Storage Tanks

Type of APG Stage II Vapor Recovery System	Initial Test	Frequency of Retest	Purpose of Test	CARB Test Protocol	Appendix G Page
Vapor Balance System	Dynamic Back Pressure	12 months	Determines if back pressures on the vapor line will retard vapor flow to storage tank.	201.4	G-26
	Vapor Recovery Leak Test	12 months	Quantifies vapor tightness of the recovery system	201.3	G-10
	Liquid Blockage Test	5 years	Quantifies ability to remove liquid from the vapor passage	201.6	G-59
Vapor Assist System Type 1	Air to Liquid Ratio Test	12 months	Quantifies the ratio of air and liquid pulled through the vapor recovery system	201.5	G-45
	Vapor Recovery Leak Test	12 months	Quantifies vapor tightness of the recovery system	201.3	G-10
	Liquid Blockage Test	5 years	Quantifies ability to remove liquid from the vapor passage	201.6	G-59
Vapor Assist System Type 2 Healy Model 400	Nozzle Regulation Test	12 months	Determines compliance with 10 gpm maximum flow rate limitation	Executive Order G-70-186 Exhibit 6	G-67
	Vapor Return Leak Tightness Test	12 months	Verifies vapor tightness of the high vacuum portions of the Healy 400 System	Executive Order G-70-186 Exhibit 4	G-65
	Liquid Blockage Test	5 years	Quantifies ability to remove liquid from the vapor passage	201.6	G-59

c. Tests must be conducted as required in the above schedule or upon replacement of 75 percent or more of an approved system. Testing shall be coordinated through DIO by the appropriate AEC. It is the responsibility of each AEC to ensure that the testing is conducted in a timely manner. DSHE will conduct periodic reviews of the testing records to ensure that APG is in compliance at all facilities.

d. Before a test is conducted, the AEC must notify DSHE 28 days before the test is scheduled. In turn, DSHE will notify the MDE at least 21 days before the scheduled test. A test protocol consistent with those listed in Table 3-4-2 must be available at the test site during testing. The test protocols and forms required by COMAR 26.11.24.04 are located in Appendix G of this regulation. The AEC shall ensure that the contractor/persons conducting the test provides a protocol for the test being conducted. Each AEC needs to immediately forward all test results to DSHE air program coordinator who will immediately forward them to the MDE.

e. The automatic shutoff mechanism is required to be tested upon installation and at least monthly after that to ensure they operate properly. The automatic shutoff valve is the valve that shuts the nozzle off in order to prevent the vehicle fuel tank from over-filling. The automatic shutoff valve can be checked by observing a vehicle fill its tank and ensuring that the nozzle clicks off. Figure 3-4-2 contains the form that must be completed by the operator. The form must be forwarded to DSHE and kept on file as discussed in Section 3-4-4-8. Each AEC shall ensure operators conduct these inspections.

f. The flow prohibiting mechanisms are required to be tested upon installation and at least monthly after that to ensure they operate properly. The flow prohibition valve prohibits the nozzle from dispensing gasoline unless the system has been activated. The flow prohibition valve can be checked by depressing the handle without activating the dispenser to ensure that it does not dispense gasoline. Figure 3-4-2 contains the form that must be completed by the operator. The form must be forwarded to DSHE and kept on file as discussed in Section 3-4-4-8. Each AEC shall ensure operators conduct these inspections.

Figure 3-4-2: Automatic Shutoff and Flow Prohibiting Mechanisms Testing Form

Automatic Shutoff Valves and
Flow Prohibiting Mechanism Testing
For Year _____

Facility Building Number _____

MDE Registration Number _____

Month	*Date Conducted	**Shutoff Valve	**Flow Prohibiting Mechanism	Operator Initials	***Comments
January		[] Pass [] Fail	[] Pass [] Fail		
February		[] Pass [] Fail	[] Pass [] Fail		
March		[] Pass [] Fail	[] Pass [] Fail		
April		[] Pass [] Fail	[] Pass [] Fail		
May		[] Pass [] Fail	[] Pass [] Fail		
June		[] Pass [] Fail	[] Pass [] Fail		
July		[] Pass [] Fail	[] Pass [] Fail		
August		[] Pass [] Fail	[] Pass [] Fail		
September		[] Pass [] Fail	[] Pass [] Fail		
October		[] Pass [] Fail	[] Pass [] Fail		
November		[] Pass [] Fail	[] Pass [] Fail		
December		[] Pass [] Fail	[] Pass [] Fail		

* If conducted as part of the daily inspection checklist, indicate by writing "DAILY"
** If conducted daily, check the PASS box only if it passed everyday
*** If a failure is observed, indicate when the pump was taken out of service, the corrective actions taken, the date the pump was brought back online, and the date of the re-test.

3-4-4-5. Test Failures

a. If a gasoline dispensing facility fails any test listed in Section 3-4-4-4, then MDE must be notified in writing within 5 working days after the test and before retesting occurs. Each AEC must immediately forward all test results, whether the facility passed or failed, to DSHE who will immediately forward them to the MDE. If the test fails, the AEC must notify DSHE of the rescheduled test date. DSHE will notify the MDE in writing of the failure and the rescheduled test date.

b. Any equipment that fails a performance test or is discovered to be defective during an inspection, the equipment must be tagged "Out-of-Service" and its use discontinued until repairs/replacements are made. The AEC must inform DSHE within 48 hours following the repair or replacement of the defective equipment. In turn, DSHE must notify the MDE within 72 hours following the repair or replacement of the defective equipment if discovered during an inspection by the MDE.

c. If a deviation of any of the requirements or conditions in this chapter is observed, it must be reported immediately to DSHE. DSHE will then instruct and advise the facility as to the proper actions.

3-4-4-6. Inspection Requirements

a. A system with only a Stage I Vapor Recovery or no vapor recovery system does not need to be regularly inspected.

b. Stage II Vapor Recovery Systems must be inspected daily to verify that the system is in proper working order. It is important that a trained operator physically conducts the daily inspections and that all aspects of the system are inspected. If defective equipment is discovered, the equipment must be taken immediately out-of-service. Any nozzles associated with the defective equipment must be tagged "Out-of-Service" until the defective equipment is repaired. If the facility operates while there is defective equipment at the facility, the facility is in direct violation of the Maryland regulations.

c. If defective equipment is discovered by the MDE, than the AEC must inform DSHE within 48 hours of the repair or replacement of the defective equipment. In turn, DSHE must notify the MDE within 72 hours following the repair or replacement of the defective equipment.

3-4-4-7. Training Requirements

a. A facility with only a Stage I Vapor Recovery or no vapor recovery system must have one person who is familiar with the operation and maintenance of the gasoline dispensing facility. This person must ensure that all employees involved in operation and maintenance are knowledgeable of the operations.

b. Facilities with Stage II Vapor Recovery systems must have at least one operator who has attended an MDE-approved Stage II Vapor Recovery training course. The AEC must ensure that each gasoline dispensing facility has one person who is officially trained. The trained employee may assist in training all other employees involved in the operation and maintenance of the approved system. Coordination for MDE approved training shall be made through DSHE.

3-4-4-8. Record-keeping Requirements

a. Gasoline dispensing facilities equipped with no vapor recovery system or only Stage I Vapor Recovery must create and maintain records on gasoline throughput and tank sizes. Copies of the records need to be maintained at the facility as well as with each AEC. Records must be made available upon request. DSHE will collect a copy of the records for the Annual Emissions Certification.

b. Gasoline dispensing facilities equipped with Stage II Vapor Recovery systems must maintain the following records:
- Test reports
- Daily and monthly inspection sheets
- Permits
- Violation notices
- Correspondence internally and with the MDE
- Equipment maintenance records
- Training records
- Other information pertinent to this chapter

c. All of these records must be maintained at the facility and by DSHE. Each AEC may opt to keep a copy of the records in their office in case the records at the facility are misplaced. DSHE will forward any correspondence with the MDE to the appropriate AEC for the facility's records. DSHE will also maintain a record of correspondence with the MDE. All records must be maintained for at least 5 years.

d. The equipment maintenance records need to be maintained for at least 2 years. They shall include:
- Date on which the defective equipment was found
- Description of each defect
- Description of the corrective action
- Date on which the defect was corrected
- Probable cause of the defect
- If parts are replaced
  - Location in the system of the part
  - Part number
  - Assurance records that that replacement part does not degrade the efficiency of the system
- Notes describing any actions which were conducted to take the system out-of-service

3-4-4-9. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions required to return to complaint operations.

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3-5. Laboratories

3-5-1. Scope

The purpose of this section is to describe and list the specific actions necessary of APG to maintain compliance with the Federal and State of Maryland regulations with respect to laboratories located at APG.

3-5-2. Background

Air emissions (stack and fugitive) from laboratories are generally very small. However, since the installation is home to numerous laboratories, APG considers laboratory emissions in its comprehensive air emissions inventory when conducted. This comprehensive inventory allows APG environmental managers to make informed air quality management decisions, and to accurately report facility-wide emissions to the Maryland Department of the Environment (MDE).

The decision to permit laboratory operations is one that is made on a case by case basis due to overlapping and ambiguous regulatory language subject to varying interpretations as to when and what type of permits are required. Permitting is further discussed in Section 3-5-4-2.

3-5-3. Policy

a. It is APG's policy to ensure that laboratories on Post are in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to laboratories:

(1) COMAR 25.11.15.04: Requirement to Quantify Emissions
The facility must quantify emissions of Toxic Air Pollutants (TAPs) in sufficient detail to demonstrate compliance with the TAP regulations' ambient impact requirement (COMAR 26.11.15.06).

(2) COMAR 26.11.15.06: Ambient Impact Requirement
A facility may not construct, modify, or operate or cause to be constructed, modified, or operated any installation or source, constructed after July 1, 1988, without first demonstrating that the total allowable emissions of each toxic air pollutant discharged by the facility will not unreasonably endanger human health.

(3) COMAR 26.11.15.07: General Requirements for Compliance Demonstrations
The facility must demonstrate that air emissions will not unreasonably endanger human health using the procedures provided in COMAR 26.11.16, Procedures Related to Requirements for Toxic Air Pollutants.

3-5-4. Requirements

There are additional requirements regarding laboratories including responsibilities, permitting, compliance demonstrations, and non-compliance actions.

3-5-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply to laboratory operations.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Ensure that a comprehensive air emissions inventory is completed every five years (to include laboratory air emissions).
(2) Utilize the most current inventory to demonstrate facility-wide compliance with the Toxic Air Pollutant regulations.
(3) In the event of non-compliance, negotiate a Compliance Plan with the Maryland Department of the Environment.

b. Activity Environmental Coordinators

(1) Support the collection of comprehensive air emissions inventory data for activity laboratory operations.
(2) Ensure that data is accurate, complete, and submitted in a timely manner.
(3) If a new lab is going to be constructed or modified, a TAPs screening and analysis must be conducted or significant information must be provided to DSHE for a TAPs analysis.

3-5-4-2. Permitting

a. There are two types of permits for a source at APG – (1) a registration (for existing sources) or a Permit to Construct (for new sources) and (2) a Title V operating permit. For more information on the types of permits and the permitting process refer to Section 2-1.

b. The regulations regarding registration permits or Permits to Construct contain a specific exemption for bench scale equipment used exclusively for chemical and/or physical analyses or experimentation. Therefore, there are no registration permits or Permit to Construct requirements for bench scale equipment within a laboratory. The regulations for Title V operating permits do not contain a similar exemption but do allow the Maryland Department of the Environment to exempt sources on a case-by-case basis. In summary, all new laboratories containing bench scale equipment will not have Permit to Construct requirements but the DSHE will have to enter into negotiations with the Maryland Department of the Environment to resolve whether the laboratory equipment will have to be included in APG's current Title V permit.

3-5-4-3. Compliance Demonstration

a. DSHE is responsible for conducting the TAP inventory. Facility-wide emissions rates (for both the Aberdeen and Edgewood Areas) must be determined for each Toxic Air Pollutant (TAP) using the comprehensive emissions inventory. APG conducts a periodic TAP inventory that includes laboratories to demonstrate compliance. For additional information, refer to Section 2-4, which describes the procedures and information needed regarding the TAP inventory.

b. Routine compliance requirements may be imposed should a laboratory be included in the Title V Operating Permit. The Title V Permit will prescribe the exact operational requirements. Currently, no laboratory is included in the Title V Permit.

3-5-4-4. Non-Compliance

a. If a facility is unable to demonstrate compliance with the TAP regulations, then a Compliance Plan must be developed and approved by the Maryland Department of the Environment. If this occurs, DSHE will be responsible for developing the Compliance Plan for APG.

b. Non-compliance with any Title V Operating Permit requirements, if existing, must immediately be reported to DSHE.

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3-6. Fire Test Laboratory and Fire Safety Test Enclosure

3-6-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to the operation of the Fire Test Laboratory and the Fire Safety Test Enclosure.

3-6-2. Background

At APG, there is a Fire Test Laboratory equipped with a thermal oxidizer and a Fire Safety Test Enclosure (FSTE) equipped with various control equipment.

3-6-3. Policy

a. It is APG's policy to ensure that the operation and maintenance of the Fire Test Laboratory and the FSTE is in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to the two facilities:

(1) COMAR 26.11.06.02: Visible Emissions
The facility may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers.

(2) COMAR 26.11.06.03: Particulate Matter
The facility may not cause or permit to be discharged into the outdoor atmosphere from any installation, particulate matter in excess of 0.03 gr/SCFD (grains per dry standard cubic foot), which is equivalent to 68.7 mg/dscm (milligrams per dry standard cubic meter).

(3) COMAR 26.11.06.06: Volatile Organic Compounds
A facility may not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972, in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall.

(4) Permits to Construct
The permits to construct for the various facilities contain specific operational limits that apply to the particular booth.

3-6-4. Requirements

The responsibilities, emissions standards, and operational and record keeping requirements specific to the Fire Test Lab and Fire Safety Test Enclosure are outlined in the following.

3-6-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to the Fire Test Laboratory and the Fire Safety Test Enclosure.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collection of all necessary records and information for reports.

b. Activity Environmental Coordinator

(1) Ensure that the facilities are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that all appropriate records are being maintained. Make the records available upon request.
(3) Calculate on at least a monthly basis, the emissions from the facilities.
(4) Ensure that the proper monitoring of the equipment is being practiced.

c. Operators

(1) Ensure that the facilities are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to the appropriate AEC.
(2) Maintain all appropriate records. Make the records available upon request.
(3) Ensure that the equipment is being monitored.
(4) Perform appropriate maintenance on the equipment and post records of the maintenance checks and/or work performed on the process train.

3-6-4-2. Operational Requirements

a. There are several operational requirements that are essential to comply with applicable regulations of the Clean Air Act. At both the Fire Test Lab and the FSTE, the thermal oxidizer must be operated at a minimum temperature of 1400^{o}F. The temperature of the gas leaving the combustion chamber must be continuously monitored and recorded by equipping the thermal oxidizer with a sensor and recorder. If the temperature drops below 1400 ^{o}F, the operations must be discontinued and repairs and adjustments must be made to ensure that the operating temperature is achieved. The sensors must be checked and/or replaced as needed. The most recent replacement and/or maintenance check shall be posted in a conspicuous location visible to the operating staff.

b. At the FSTE, the caustic feed recirculating system must be equipped with an automatic pH monitoring and recording system. The facility must continuously monitor the pH level of the caustic liquor. The pH level must not be less than 5.5.

c. The fabric filter (baghouse) at the FSTE must be equipped with a pressure sensor and recorder to continuously measure the differential pressure. This must be recorded once per day when the facility is in operation. The differential pressure must be 3 to 8 inches of water. If the differential pressure is observed to be out of range, corrective measures must be taken within five working days to bring it back in range. It can be continued to be in operation for the five days, however, after five days if it still is not within range, it must be shutdown, taken offline, and repairs and maintenance must be performed to bring it back within range.

3-6-4-3. Emissions Standards

a. Both facilities may not cause or permit the discharge of VOC in excess of 20 pounds per day unless the discharge is reduced by 85 percent or more overall.

b. The VOC emissions must be calculated monthly by each AEC to ensure that the facilities are in compliance with the emissions limitations. Figure 3-6-1 demonstrates how VOC calculations will be conducted. Maintain a copy of all calculation records.

c. DSHE will calculate all of the emissions annually from the Fire Test Lab and the FSTE for the Emissions Certification Report that is submitted to the MDE. The emissions will be calculated by the method outlined in Figure 3-6-1.

d. No visible emission must be emitted from either facility. Particulate matter emissions from the test labs are limited to 0.03 gr/SCFD (68.7 mg/dscm). The particulate emissions from the facilities must be measured or calculated monthly by each AEC. The emissions can be measured via a stack test or calculated as shown in Figure 3-6-2. Maintain a copy of all calculation or measurement records.

Figure 3-6-1: Calculation of Emissions from Fire Testing Facilities

Emissions from the Fire Test Lab are calculated using the emission factors found in AP-42, Fifth Edition Table 1.3-1 for Uncontrolled Fuel Oil Combustion as this best represents the burns taking place at the Fire Test Lab. The highest emission factors for VOC and PM are used and the lowest emission factors for NOx, SOx and CO are used since this best represents the materials being burned at these facilities.

These emission factors apply for materials such as Jet Fuel (JP8) or Heptane being burned. If another material such as FE-36 is burned, the AEC should contact DSHE for calculation assistance.

Emission Factors in lb/10000 gallons	
NOx	18
CO	5
SOx	4.26
PM*	10
VOC	1.13

* The Fire Test Lab is equipped with a thermal oxidizer. An 85% removal is assumed because of the treatment train (AP-42). Therefore, multiply the emission rate quantity by 0.15.
* The Fire Safety Test Enclosure is equipped with an extensive treatment train that includes: thermal oxidizer, evaporative quencher, spray dryer/absorber, fabric filter, and packed bed scrubber. A 90% removal is assumed because of the treatment train (AP-42). Therefore, multiply the emission rate quantity by 0.10

.

$$\text{Annual Emission Rate}\left(\frac{\text{tons}}{\text{year}}\right) = \frac{\text{Annual amount of material burned}\left(\text{gallons}\right) * \left(\frac{\text{Emission Factor}\left(\text{lbs}\right)}{\text{10,000 gallons}}\right)}{\left(\frac{\text{2,000 lbs}}{\text{ton}}\right)}$$

$$\text{Daily Emission Rate}\left(\frac{\text{lbs}}{\text{day}}\right) = \frac{\text{Amount of material burned}\left(\text{gallons}\right) * \left(\frac{\text{Emission Factor}\left(\text{lbs}\right)}{\text{10,000 gallons}}\right)}{\text{days operated}}$$

If calculating PM, multiply by the appropriate factor discussed above.

Figure 3-6-2: Calculation of PM Emissions in gr/ft^3

To convert the PM emission rate to gr/ft^3 the following calculations apply:

$$\text{PM Emissions}\left(\frac{\text{lb}}{\text{hour}}\right) = \sum\left[\text{PM Emissions}\left(\frac{\text{lb}}{\text{day}}\right)\right] * \left[\frac{\text{hours operated}}{\text{day}}\right]$$

$$\text{PM Emissions}\left(\frac{\text{grain}}{\text{ft}^3}\right) = \frac{\left[7{,}000\left(\frac{\text{grains}}{\text{lb}}\right)\right] * \left[\text{PM Emissions}\left(\frac{\text{lb}}{\text{hr}}\right)\right]}{\left[\text{Flow Rate}\left(\frac{\text{ft}^3}{\text{hr}}\right)\right]}$$

The flow rate must be measured or assumed to be the value listed in the permit or manufacturer's specifications.

$$\text{Flow rate}\left(\frac{\text{ft}^3}{\text{hr}}\right) = \left[\text{Velocity}\left(\frac{\text{ft}}{\text{min}}\right)\right] * [\text{Stack Height Above Ground (ft)}] * [\text{Stack Inside Diameter at Top (in)}] * \left[\frac{60\ \text{min}}{\text{hr}}\right]$$

3-6-4-4. Record-keeping Requirements

a. Records of the temperature reading and gas usage for the thermal oxidizers at both facilities must be maintained on site for at least five years. The records must be made available for review by the MDE if requested.

b. At both facilities, material usage logs must be maintained for a period of at least five years. The material usage and emissions for each of the facilities will be included in the Annual Emissions Certification, which will be prepared by DSHE; see section 2-9. DSHE will collect the material usage logs semi-annually and the records must be made available to the MDE if requested.

c. At the Fire Safety Test Enclosure, records of the pressure drop across the baghouse must be maintained on site for at least five years. The records must be made available for review by the MDE if requested.

d. The records of caustic lime slurry and caustic liquor at the Fire Safety Test Enclosure must be maintained on site for at least a five-year period. These records must be made available to the MDE upon request.

3-6-4-5. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

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3-7. Welding Operations

3-7-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to welding operations.

3-7-2. Background

Portable welding operations such as those conducted in maintenance shops are exempt from the requirements of this chapter. This chapter applies to stationary welding units such as the ones located at Building 5014.

3-7-3. Policy

a. It is APG's policy to ensure that the welding operations on Post are in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to welding operations:

(1) COMAR 26.11.06.02: Visible Emissions
The facility may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers.

(2) COMAR 26.11.06.03: Particulate Matter
The facility may not cause or permit to be discharged into the outdoor atmosphere from any installation, particulate matter in excess of 0.03 gr/SCFD (grains per dry standard cubic foot), which is equivalent to 68.7 mg/dscm (milligrams per dry standard cubic meter).

(3) COMAR 26.11.15.05: Control Technology Requirements
A facility may not cause, reconstruct, operate, or cause to be constructed, reconstructed, or operated, any installation or source, constructed after July 1, 1988, that will discharge a toxic air pollutant to the atmosphere without first installing and operating Best Available Control Technology for Toxics (T-BACT).

(4) COMAR 26.11.15.06: Ambient Impact Requirement
A facility may not construct, modify, or operate or cause to be constructed, modified, or operated any installation or source, constructed after July 1, 1988, without first demonstrating that the total allowable emissions of each toxic air pollutant discharged by the facility will not unreasonably endanger human health.

3-7-4. Requirements

There are many requirements specific to welding operations with respect to responsibilities, operation, emissions standards, record-keeping, and reporting as outlined in the following.

3-7-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to welding operations.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collect all necessary records and information for reports.

b. Activity Environmental Coordinators

(1) Ensure that the welding facility is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Measure or calculate monthly the particulate emissions from the welding facility. Maintain records of measurements or calculations.

c. Contractors, Governmental Owned Contractor Operated Facilities (GOCO)

(1) Ensure that the welding facility is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Measure or calculate monthly the particulate emissions from the welding facility. Maintain records of measurements or calculations.

d. Non-GOCO Contractors

(1) Ensure that the welding facility is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE via the contractor's COR.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Measure or calculate monthly the particulate emissions from the welding facility. Maintain records of measurements or calculations.

e. Welding Booth/Facility Operators

(1) Maintain records of material usage and hours of operation for a period of at least 5 years.
(2) Ensure that the welding facility is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to the appropriate AEC.

3-7-4-2. Record-keeping Requirements

a. Any welding conducted at the welding booths must maintain records of material usage. A record of the amount (lbs) of each electrode type used shall be maintained on a monthly basis. The numbers of hours operated must also be recorded. The records will be collected at least annually by DSHE and they must be made available to MDE upon request. All records need to be maintained at the facility for at least 5 years. An example log is presented in Figure 3-7-1.

Figure 3-7-1: Example Material Usage Log

Material Usage Log for Welding Stations

MDE Registration Number 12-6-0170

Building Number 5014

Number of Welding Stations in Use 247

Date January 1, 2002 – January 15, 2002

Welding Process	Electrode Type	Usage (lb/day)	Operating Schedule		Supervisor Initials
			hrs/day	days/month	
SMAW	E6010	20	8	20	MED

b. The material usage and emissions of the materials used at each welding booth will be included in the Annual Emissions Certification, which will be prepared by DSHE. DSHE will collect all necessary information for the certification report.

3-7-4-3. Emissions Standards

a. No visible emissions can be emitted from welding operations.

b. Particulate matter emissions from the welding are limited to 0.03 gr/SCFD (68.7 mg/dscm). The particulate emissions from the welding booth shall be measured or calculated monthly by the AEC. The emissions can be measured by conducting a stack test or calculated as shown in Figure 3-7-2.

Figure 3-7-2: Calculation of Particulate Matter from Welding Operations

Particulate Matter (PM) and particulate-phase hazardous air pollutants are the major concerns in the welding operations. Most of the particulate matter produced by welding is sub-micron in size, and, as such, all is considered to be PM-10.

$$\text{PM Emissions}\left(\frac{\text{lb}}{\text{day}}\right) = \sum\left[\text{Usage}\left(\frac{\text{lb}}{\text{day}}\right)\right] * \left[\text{Emission Factor}\left(\frac{\text{lb}}{10^3 \text{ lb of Electrode Consumed}}\right)\right] * \left[\frac{1}{1000}\right]$$

Emission Factors are located in AP-42 Table 12.19-1: PM-10 Emission Factors for Welding Operations. In the table below are common electrode types used at APG.

Welding Process	Electrode Type	Total Fume Emission Factor ($lb/10^3$ lb of Electrode Consumed)
SMAW	E6010	25.6
	E6011	38.4
	E7018	18.4
GMAW	E308	5.4

$$\text{PM Emissions}\left(\frac{\text{lb}}{\text{hr}}\right) = \sum\left[\text{PM Emissions}\left(\frac{\text{lb}}{\text{day}}\right)\right] * \left[\left(\frac{\text{hours operated}}{\text{day}}\right)\right]$$

$$\text{PM Emissions}\left(\frac{\text{gr}}{\text{ft}^3}\right) = \frac{\left[7{,}000\left(\frac{\text{grains}}{\text{lb}}\right)\right] * \left[\text{PM Emissions}\left(\frac{\text{lb}}{\text{hr}}\right)\right]}{\left[\text{Flow Rate}\left(\frac{\text{ft}^3}{\text{hr}}\right)\right]}$$

The flow rate must be measured or assumed to be the value listed in the permit or manufacturer's specifications.

$$\text{Flow rate}\left(\frac{\text{ft}^3}{\text{hr}}\right) = \left[\text{Velocity}\left(\frac{\text{ft}}{\text{min}}\right)\right] * \left[\text{Stack Height Above Ground}\left(\text{ft}\right)\right] * \left[\text{Stack Inside Diameter at Top}\left(\text{in}\right)\right] * \left[\frac{60 \text{ min}}{\text{hr}}\right]$$

3-7-4-4. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will then instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

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3-8. Mobile Sources

3-8-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to mobile sources.

3-8-2. Background

The operation and maintenance of motor vehicles ("mobile sources") at APG are governed, both directly and indirectly, by a variety of government regulations and U.S. Army policies. Vehicle operations are impacted by fuel storage tank regulations (detailed in Section 3-4 – Storage Tanks) and the voluntary Ozone Action Days program (detailed in Section 3-12 – Ozone Action Days), as well as State of Maryland regulations requiring biennial inspections and emission testing and U.S. Army policy regarding elimination of Class I Ozone Depleting Chemicals (including CFC-12/R-12, the refrigerant historically used in motor vehicle air-conditioners). Ozone Depleting Chemical management activities at APG are summarized in Section 2-8.

3-8-3. Policy

a. It is APG's policy to ensure that all mobile sources on Post are in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations and policies with respect to mobile sources:

(1) COMAR 26.11.13: Control of Gasoline and VOCs Storage and Handling
Contains applicable requirements for small storage tank loading operations and requirements for Stage I Vapor Recovery Systems. Impacts to APG are detailed in Section 3-4 and are not repeated in this section.

(2) COMAR 26.11.24: Stage II Vapor Recovery Systems
Contains applicable requirements for gasoline dispensing facilities at APG. Impacts to APG are detailed in Section 3-4 and are not repeated in this section.

(3) COMAR 11.14.08: Vehicle Emissions Inspection Program
Requires all non-exempt (i.e., non-tactical) vehicles, owned or leased by APG, to be inspected biennially for compliance with vehicle emission standards.

(4) COMAR 26.11.20: Mobile Sources
Prohibits the removal or alteration of any air pollution control devices that were installed as a requirement of Federal law.

(5) Clean Air Act Amendments of 1990, Section 609
Establishes standards and requirements for servicing of motor vehicle air conditioners (tactical vehicles are exempt).

(6) ACSIM Memorandum, 3 Jul 97, Elimination of the Dependency of Ozone-Depleting Chemicals (ODCs) in Army Facilities.
Establishes command-level responsibilities for ODC elimination, and requires the elimination of the use of Class I ODCs by the end of FY03 and the recovery and reuse of CFC refrigerants.

(7) AMSSB-DIC (200) Memorandum, 1 May 02, Fuel Station Closure on Forecasted Ozone Action Days (OADs).
Establishes APG policy on actions to be taken on forecasted OADs. These impacts are detailed in Section 3-12 and are not repeated in this section.

3-8-4. Requirements

There are required responsibilities, inspections, and regulatory requirements specific to mobile sources that are outlined in the following.

3-8-4-1. Responsibilities

In addition to the responsibilities noted in Section 1-4, the following are specific to mobile sources.

a. Commander, Installation, Garrison, Aberdeen Proving Ground

Responsible for ODC elimination.

b. APG Garrison Directors, Commanders, and Activity Heads

(1) Responsible for complying with APG's ODC elimination efforts.
(2) Responsible for ensuring compliance with State of Maryland Vehicle Emissions Inspection Program for all owned or leased non-tactical vehicles.

c. Director of Installation Operations (DIO)

(1) Responsible for maintaining inventory of all CFCs at APG and ensuring that all R-12 refrigerant has been replaced.
(2) Providing support for the improvement and expansion of APG's use of Compressed Natural Gas (CNG)-powered vehicles, to include development of an alternative-fueled vehicle usage tracking system.

d. Chief, Environmental Compliance Division, Directorate of Safety, Health and Environment (DSHE)

(1) Maintain a current Ozone Depleting Chemical Elimination Plan.
(2) Encourage the use of alternative-fueled vehicles through the identification of barriers to use and the implementation of programs to overcome those barriers.

e. Activity Environmental Coordinators

(1) Ensure Activity's compliance with APG ODC Elimination Plan.
(2) Ensure that all vehicles owned or leased by the Activity receive and pass the biennial emissions inspection.
(3) Encourage the use of dual fuel vehicles by Activity personnel, and provide feedback to DSHE and DIO concerning ways to improve and expand the use of CNG-powered vehicles.

f. Contractors

Ensure that personnel, who are performing maintenance on mobile air conditioning systems, are properly trained and certified.

3-8-4-2. Vehicle Emissions Inspection

a. APG policy requires that all non-tactical, gasoline-powered vehicles (less than 26,000 pounds gross vehicle weight) owned or leased by any command, activity, tenant, or organization be tested one (1) year after the vehicle's initial acquisition and biennially thereafter. The inspection station(s) used must be properly licensed, staffed, and equipped.

b. The most current Vehicle Inspection Reports are retained in the vehicles and any Vehicle Repair Records generated to achieve compliance with the emissions standards are to be maintained for at least two (2) years.

3-8-4-3. Alternative Fueled Vehicles

a. APG, as part of the U.S. Army's "Federal Alternative Fueled Vehicle Leadership" initiatives, has acquired some dual fuel (gasoline and compressed natural gas – CNG) vehicles. These vehicles and CNG fueling stations are currently being evaluated. The use of CNG-powered vehicles is expected to increase as personnel gain experience and confidence, and mechanical and logistical problems are identified and remedied.

b. CNG fueling stations remain open during Ozone Action Days, providing an incentive for personnel to use CNG in the dual fuel vehicles.

3-8-4-4. Motor Vehicle Air Conditioners

a. The APG "ODC Elimination Team" has reviewed the activities of the motor pool and the Morale, Welfare and Recreation (MWR) automobile hobby shop and has found that no in-house Army or tenant personnel are performing maintenance on mobile air conditioning systems.

b. Contractor technicians, who are properly trained and certified, are providing all maintenance for this equipment. Therefore, no Army technicians are required by the Clean Air Act Amendments to obtain and maintain EPA certifications.

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3-9. Degreasing

3-9-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to degreasing operations.

3-9-2. Background

There are two methods for degreasing – cold degreasing and vapor degreasing. Cold degreasing includes the use of degreasing material that removes grease from metal, but also leaves a residue on the metal for anti-corrosion and other protective purposes. Vapor degreasing is the application of heat to vaporize degreasing material in which the resulting vapors are used to remove grease from the metal. VOC degreasing material refers to any degreasing material, including water-based degreasing material, which contains five percent or more VOC.

3-9-3. Policy

a. It is APG's policy to ensure that all degreasing operations on the Post are in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulation with respect to degreasing operations:

COMAR 26.11.19.09: Control of VOC Emissions from Cold and Vapor Degreasing
The facility must adhere to these regulations when conducting cold and vapor degreasing to minimize VOC emissions.

3-9-4. Requirements

There are specific responsibilities as well as operational, record keeping, and reporting requirements specific to vapor degreasing activities at APG as discussed in the following.

3-9-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to degreasers.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions from this chapter, State and Federal regulations, and any permits.
(2) Collect all necessary records and information for reports.

b. Activity Environmental Coordinator

(1) Ensure that the degreasers are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE.
(2) Ensure the best operating practices are being utilized and that operators are familiar with them (see Section 3-9-4-2).
(3) Ensure that appropriate records are being maintained.

c. Contractors, Government Owned Contractor Operated Facilities (GOCO)

(1) Ensure that the degreasers are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE.
(2) Ensure the best operating practices are being utilized and that operators are familiar with them (see Section 3-9-4-2).
(3) Ensure that appropriate records are being maintained.

d. Non-GOCO

(1) Ensure that the degreasers are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE via the contractor's COR.
(2) Ensure the best operating practices are being utilized and that operators are familiar with them (see Section 3-9-4-2).
(3) Ensure that appropriate records are being maintained.

e. Operators

(1) Ensure that all operators are familiar with best operating practices.
(2) Maintain all appropriate records.

3-9-4-2. Operating Requirements

These requirements apply to a facility which uses a VOC degreasing material for use in cold or vapor degreasing, including cold and vapor degreasing at fueling stations, motor vehicle repair shops, machine shops, and any other metal refinishing, cleaning, repair, or fabrication facility.

a. Cold Degreasing

(1) If cold degreasing is being conducted, the vapor pressure of the VOC degreasing material cannot exceed 1 mm Hg at 20^{o}C (0.019 psia). Halogenated substances that are a VOC cannot be used in any cold degreaser.

(2) A facility must implement good operating procedures to minimize spills and evaporation of VOC degreasing material. Good operating procedures must include, but are not limited to, covers (including water covers), lids or other methods of minimizing evaporative losses, and reducing the time and frequency during which parts are cleaned. Some examples of good operating procedures are outlined in Figure 3-9-1.

(3) Good operating procedures must be established in writing, and displayed so they are clearly visible to the operator. The written good operating practices must be maintained at the facility and made available for review by the MDE upon request.

(4) Operators must be familiar with good operating procedures. Each AEC must ensure that their facilities are always practicing the good operating procedures.

Figure 3-9-1: Good Degreasing Operating Procedures

The following operating practices are recommended for a source owner conducting solvent metal cleaning:

(a) Cold cleaning degreasing.

(1) Clean parts shall be drained at least 15 seconds or until dripping ceases.

(b) Open-top vapor degreasing.

(1) Minimize solvent carryout by the following measures:

(i) rack parts to allow full drainage;

(ii) move parts in and out of degreaser tank at less than 11 ft/min;

(iii) degrease the work load in the vapor zone at least 30 seconds or until condensation ceases;

(iv) tip out any pools of solvent before removal; and

(v) dry parts for at least 15 seconds or visually dry before removal.

(2) Degrease only nonporous or nonabsorbent material.

(3) Work loads shall not occupy more than half of degreaser tank open-top area.

(4) Spray only below the vapor level.

(c) Conveyorized degreasers.

(1) Exhaust ventilation rate shall not exceed 125 percent of the minimum ventilation rate required for the protection of workers in the vicinity of the degreaser.

(2) Minimize carry-out emissions by:

(i) proper racking for best drainage; and

(ii) conveyor speed at less than 11 ft/min.

(3) Water shall not be visibly detectable in the solvent leaving in the water separator.

b. Vapor Degreasing

(1) VOC degreasing material may not be used in vapor degreasing unless the vapor degreaser is equipped with a condenser or an air pollution control device with an overall control efficiency of not less than 90 percent.

(2) Best operating procedures must be practiced when operating a vapor degreasing facility. Vapor degreasing must include separate enclosed chambers that allow draining of the parts being cleaned, capture of the vapors, or include other procedures or methods to minimize evaporative losses of degreasing material. Figure 3-9-1 outlines some suggested good operating procedures.

3-9-4-3. Record-keeping

a. A facility using vapor degreasing must maintain records of the total VOC degreasing material used and make the records available upon request.

b. All records must be forwarded to DSHE annually for inclusion in the Emissions Certification Report.

3-9-4-4. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed and report the deviation to the appropriate agencies.

3-10. Metal Cleaning Baths

3-10-1 Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to the operation of metal cleaning baths.

3-10-2 Background

Currently APG has only one set of permitted metal cleaning baths, located at building E3516. This location has two tanks that hold sulfuric acid and one phosphoric acid tank, installed in 1997 and 1999, respectively.

3-10-3. Policy

a. It is APG's policy to ensure that all metal cleaning baths operated on Post are in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to metal cleaning baths:

(1) COMAR 26.11.06.02: Visible Emissions
The facility may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers.

(2) COMAR 26.11.06.03: Particulate Matter
The facility may not cause or permit to be discharged into the outdoor atmosphere from any installation, particulate matter in excess of 0.03 gr/SCFD (grains per dry standard cubic foot), which is equivalent to 68.7 mg/dscm (milligrams per dry standard cubic meter).

(3) COMAR 26.11.06.05: Sulfur Compounds from Other than Fuel Burning Equipment
A facility may not cause or permit the discharge into the atmosphere from sources other than fuel burning equipment of gases containing more than 500 ppm (parts per million) of sulfur dioxide. Sources constructed before February 21, 1971, are limited to not more than 2,000 ppm sulfur dioxide.

A facility may not cause or permit the discharge into the atmosphere from sources other than fuel burning equipment of gases containing sulfuric acid, sulfur trioxide, or any combination of them, greater than 35 milligrams per cubic meter reported as sulfuric acid. Any source constructed before February 21, 1971, is limited to nor more than 70 milligrams per cubic meter of sulfuric acid, sulfur trioxide, or any combination of them, reported as sulfuric acid.

(4) COMAR 26.11.06.06: Volatile Organic Compounds
A facility may not cause or permit the discharge of VOC from any emissions source, constructed on or after May 12, 1972, in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall.

(5) COMAR 26.11.15.05: Control Technology Requirements
A facility may not cause, reconstruct, operate, or cause to be constructed, reconstructed, or operated, any installation or source, constructed after July 1, 1988, that will discharge a toxic air pollutant to the atmosphere without first installing and operating T-BACT.

(6) COMAR 26.11.15.06: Ambient Impact Requirement
A facility may not construct, modify, or operate or cause to be constructed, modified, or operated any installation or source, constructed after July 1, 1988, without first demonstrating that the total allowable emissions of each toxic air pollutant discharged by the facility will not unreasonably endanger human health.

(7) Permits to Construct
The permits to construct contain specific operational limits that apply to the source.

3-10-4. Requirements

There are required responsibilities, record keeping and operational requirements, emissions standards, and reporting requirements specific to metal cleaning baths as outlined in the following.

3-10-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to metal cleaning baths.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collect all necessary records and information for reports.

b. Activity Environmental Coordinators

(1) Ensure that the metal cleaning baths are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Ensure that the metal cleaning baths are performing in compliance with all operational requirements.
(4) If VOCs are being emitted, ensure that the VOC emissions rate is properly calculated on a daily basis to ensure that it is below the 20 lbs per day threshold limit.

c. Contractors, Governmental Owned Contractor Operated Facilities (GOCO)

(1) Ensure that the metal cleaning baths are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Ensure that the metal cleaning baths are performing in compliance with all operational requirements.
(4) If VOCs are being emitted, ensure that the VOC emissions rate is properly calculated on a daily basis to ensure that it is below the 20 lbs per day threshold limit.

d. Non-GOCO Contractors

(1) Ensure that the metal cleaning baths are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE via the contractor's COR.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Ensure that the metal cleaning baths are performing in compliance with all operational requirements.
(4) If VOCs are being emitted, ensure that the VOC emissions rate is properly calculated on a daily basis to ensure that it is below the 20 lbs per day threshold limit.

e. Metal Cleaning Bath Operators

(1) Ensure that the metal cleaning baths are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to the appropriate AEC.
(2) Maintain a log of the annual quantity of materials that are used in the process tanks. Ensure that all appropriate records are being maintained on site. Make records available upon request.
(3) Manage the metal cleaning baths in compliance with all operational requirements.
(4) If VOCs are emitted, calculate the VOC emissions rate daily to ensure that it is below the 20 lbs per day threshold limit.
(5) Maintain MSDSs for all materials used in the metal cleaning baths.

3-10-4-2. Record-keeping Requirements

a. Operators must maintain a log of the annual quantity of materials that are used in the process tanks. Whenever new material is added to the tanks, the quantity must be recorded on a log sheet. At the end of the year, the total quantity of material processed must be tallied. These records must be maintained for a period of at least 5 years and be made available to MDE upon request.

b. The material usage and emissions of the materials used in the process tanks must be included in the Annual Emissions Certification, which will be prepared by DSHE. DSHE will collect all necessary information for the certification report.

c. Records of any inspections of control equipment must be maintained on site.

d. Maintain MSDSs for all materials used in the metal cleaning baths. MSDSs shall be maintained on site for the period of time that the material is used or stored at the facility.

3-10-4-3. Operational Requirements

a. Any materials containing VOCs must be stored in a closed container. Any rags or papers that are contaminated with any type of material that contains a VOC must be stored in a closed container.

b. To minimize air emissions and to satisfy T-BACT requirements, lids must be placed on the tanks when they are not in use.

c. In addition, any heat source for the tanks must be turned off when the tanks are not in use.

3-10-4-4. Emissions Standards

a. No visible emissions can be emitted from the source.

b. Particulate matter (PM) emissions from the metal cleaning baths are limited to 0.03 gr/SCFD (68.7 mg/dscm). The current process reportedly releases no particulate matter. However, if the process is changed or modified in the future and PM becomes a factor, PM emissions will need to be evaluated to ensure that they are beneath the 0.03 gr/SCFD threshold.

c. Sulfur dioxide from the metal cleaning bath facility is limited to 500 ppm. The facility may not discharge gases containing sulfuric acid, sulfur trioxide, or any combination of them, greater than 35 milligrams per cubic meter reported as sulfuric acid. The AEC shall verify monthly that these limits are not being exceeded.

d. The metal cleaning baths may not discharge VOCs in excess of 20 pounds per day unless the discharge is reduced by 85 percent or more overall. Currently, the materials used at building E3516 do not emit VOCs. However, if the baths used VOC-emitting material, the VOCs released must be calculated daily to ensure that it is below this threshold limit. The method for calculating the VOC emissions rate is demonstrated in Figure 3-10-1.

Figure 3-10-1: Calculation of VOC Emissions from Metal Cleaning Baths

To calculate VOC emissions, the content of the materials being used must be taken from the MSDS. The MSDS will give the weight % of each of the materials used as well as the density of the material.

$$\text{VOC Emissions}\left(\frac{\text{lb}}{\text{day}}\right) = \sum\left[\text{Usage}\left(\frac{\text{gal}}{\text{day}}\right)\right] * \left[\text{Density}\left(\frac{\text{lb}}{\text{gal}}\right)\right] * \left[\text{TAP Wt \% that is VOC}\right]$$

3-10-4-5. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

3-11. Remediation Systems

3-11-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to the operations and maintenance of the remediation systems.

3-11-2. Background

Remediation systems are involved in the clean up of soil and water contamination. Systems located at APG include, but are not limited to, Vacuum Extraction Systems (VES) and packed tower air strippers. There are 4 permitted systems located at three sites at APG. The requirements for remediation systems depend on the type of air emissions control device installed – activated carbon canisters, thermal oxidizers, or catalytic oxidizers.

3-11-3. Policy

a. It is APG's policy to ensure that all remediation system operations on the Post are in full compliance

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to remediation systems:

(1) COMAR 26.11.06.02: Visible Emissions
The facility may not cause or permit the discharge of emissions from any facility or building, other than water in an uncombined form, which is visible to human observers.

(2) COMAR 26.11.06.03: Particulate Matter
The facility may not cause or permit to be discharged into the outdoor atmosphere from any installation, particulate matter in excess of 0.03 gr/SCFD (grains per dry standard cubic foot), which is equivalent to 68.7 mg/dscm (milligrams per dry standard cubic meter).

(3) COMAR 26.11.06.06: Volatile Organic Compounds
A facility may not cause or permit the discharge of VOC from any emissions source, constructed on or after May 12, 1972, in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall. All of the currently permitted remediation systems at APG were constructed after 1972.

(4) Permits to Construct
The permits to construct for the various remediation systems contain specific operational limits that apply to the particular system.

3-11-4. Requirements

There are specific responsibilities, record-keeping and monitoring requirements, emissions standards, and reporting procedures associated with remediation systems as outlined in the following.

3-11-4-1. Responsibilities

In addition to the responsibilities outlines in Section 1-4, the following responsibilities apply specifically to remediation systems.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Collect all necessary records and information for reports.

b. Activity Environmental Coordinator

(1) Ensure that the remediation system is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Ensure that appropriate information is submitted to the MDE and that copies of any correspondence with the MDE are submitted to DSHE for the air compliance files.
(4) Ensure that the remediation system is performing in compliance with all operational requirements.
(5) Ensure that the remediation system is in compliance with all monitoring requirements.
(6) Ensure that the VOC emissions rate is properly calculated on a daily basis to ensure that it is below the 20 lbs per day threshold limit.

c. Contractors, Governmental Owned Contractor Operated Facilities (GOCO)

(1) Ensure that the remediation system is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Ensure that appropriate information is submitted to the MDE and that copies of any correspondence with the MDE are submitted to DSHE for the air compliance files.
(4) Ensure that the remediation system is performing in compliance with all operational requirements.
(5) Ensure that the remediation system is in compliance with all monitoring requirements.
(6) Ensure that the VOC emissions rate is properly calculated on a daily basis to ensure that it is below the 20 lbs per day threshold limit.

d. Non-GOCO Contractors

(1) Ensure that the remediation system is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to DSHE via the contractor's COR.
(2) Ensure that appropriate records are being maintained. Make the records available upon request.
(3) Ensure that appropriate information is submitted to the MDE and that copies of any correspondence with the MDE are submitted via the contractor's COR to DSHE for the air compliance files.
(4) Ensure that the remediation system is performing in compliance with all operational requirements.
(5) Ensure that the remediation system is in compliance with all monitoring requirements.

(6) Ensure that the VOC emissions rate is properly calculated on a daily basis to ensure that it is below the 20 lbs per day threshold limit.

e. Remediation System Operator/Technician

(1) Maintain all appropriate records.
(2) Submit copies of the air emissions summary to DSHE for the air compliance records.
(3) Maintain air emissions control equipment performance data and recorder charts.
(4) Ensure that the system is in compliance with all operational requirements.
(5) Ensure that all monitoring is being conducted and that the system is in compliance with the monitoring requirements.
(6) Calculate the VOC emissions rate daily to ensure that it is below the 20 lbs per day threshold limit.
(7) Ensure that the remediation system is within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report them immediately to the appropriate AEC.

3-11-4-2. Record-keeping Requirements

a. All records must be made available upon request. DSHE will request copies of the records and the data will be included in the Annual Emissions Certification Report.

b. Record-keeping requirements vary based on the type of air emissions control device installed in the system. The following requirements apply when the air stripping system is in operation:

- If activated carbon canisters are in use, the inlet and outlet VOC concentrations must be recorded at least once each week.
- When thermal oxidizers are used, the temperature of the combustion chamber must be continuously recorded.
- If catalytic oxidizers are used, the temperature of the gas stream entering the catalyst bed must be continuously recorded.

c. An air emissions summary, including the monitoring data must be included in the periodic submittal of site remediation status reports required by the Waste Management Administration's Oil Control Program. Copies of the air emissions summary must also be submitted to DSHE for the air compliance records on file.

d. Air emissions control equipment performance data and any recorder charts must be maintained on site until the MDE Air and Radiation Management Administration (ARMA) approves the removal of the control device or the site has obtained a Notice of Compliance from the Waste Management Administration allowing closure of the site. Once this has occurred, the AEC of the remediation system must check with DSHE to see if they need any additional information before records are removed from the site.

e. A copy of the Notice of Compliance from the Waste Management Administration's Oil Control Program must be submitted to MDE ARMA once the site is closed. DSHE shall ensure that this information is being submitted to MDE. A copy of the Notice of Compliance as well as any correspondence with MDE must be submitted to DSHE to go on file in the records concerning air emissions sources.

3-11-4-3. Operating Requirements

a. The requirements applicable to the operations of the remediation system depend on the type of air emissions control device that is in place.

b. If activated carbon is used to control the VOC emissions, there are several requirements regarding the canisters. One spare canister must be on site as a replacement, in addition to the dual canisters connected to the air stripping system. The first canister must be replaced when breakthrough occurs. Breakthrough means that the VOC concentration in the gas stream leaving the canister is greater than 15 percent of the VOC concentration in the gas stream entering the first canister.

c. If a thermal oxidizer is used to control the VOC emissions, the temperature of the combustion chamber must not be less than 1400^{o}F whenever the air stripping system is in use.

d. When a catalytic oxidizer is used to control the VOC emissions, the catalytic emissions bed inlet flue gas temperature shall not be less than 650^{o}F.

3-11-4-4. Monitoring Requirements

a. The performance of the air stripping systems must be monitored when it is in use. On activated carbon canisters, the inlet and outlet VOC concentrations must be measured and recorded once each week that the system is in operation.

b. In the case where thermal oxidizers are used, the temperature of the combustion chamber must be monitored and recorded continuously.

c. Catalytic oxidizers, when in use, must continuously monitor the temperature of the gas stream entering the catalyst bed.

d. In order to measure the VOC emissions concentrations in the gas stream, a portable VOC detector must be used. The portable VOC detector must be properly calibrated in accordance with the manufacturer's instructions and have a detection limit of 10 ppm or less of propane in the air.

e. In lieu of measuring the gaseous VOC discharged from groundwater air strippers, it may be assumed that all of the VOC in the water entering the stripper is transferred to the air stream.

3-11-4-5. Emissions Standards

a. No visible emissions can be emitted from the remediation systems.

b. All of the air discharged from the air stripping system shall pass through a control device with an efficiency of 85 percent or greater.

c. Particulate matter emissions from the remediation systems are limited to 0.03 gr/SCFD (68.7 mg/dscm). The particulate emissions from the remediation systems will be negligible.

d. The remediation systems may not discharge VOCs in excess of 20 pounds per day unless the discharge is reduced by 85 percent or more overall. The VOC emitted shall be calculated daily to ensure that it is below this threshold limit. The method for calculating the VOC emissions rate is demonstrated in Figure 3-11-1.

Figure 3-11-1: Calculation of VOC Emissions of Remediation Systems

To calculate VOC emissions, the content of the materials being used must be taken from the MSDS. The MSDS will give the weight % of each of the materials used as well as the density of the material.

$$\text{VOC Emissions}\left(\frac{\text{lb}}{\text{day}}\right) = \sum\left[\text{Usage}\left(\frac{\text{gal}}{\text{day}}\right)\right] * \left[\text{Density}\left(\frac{\text{lb}}{\text{gal}}\right)\right] * \left[\text{TAP Wt \% that is VOC}\right]$$

3-11-4-6. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

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3-12. Ozone Action Days

3-12-1. Scope

The purpose of this section is to describe and list the specific actions as part of APG's voluntary participation in the Ozone Action Days Program.

3-12-2. Background

The Ozone Action Days (OADs) program is a voluntary initiative by government, environmental groups, and business leaders working with citizens to take extra actions to prevent air pollution when high ozone levels are predicted. Ground level ozone, commonly referred to as smog, forms when VOCs and NOx combine in the presence of heat and sunlight. The ozone season is from April through October because ozone concentrations are generally worse in these months, because of heat and sunlight. APG has agreed to participate in the program and make efforts to reduce ozone-producing emissions to the environment on forecasted OADs. This reduction will help improve the air quality and also protect individuals, especially children and older adults.

During the ozone season, the MDE releases a "code" for the air quality on a particular day, depending on the predicted ground level ozone pollution amount for the following day. Table 3-12-1 lists the various air quality codes.

Table 3-12-1: Ozone Action Days Air Quality Codes

Code	Air Quality
Code Maroon	Hazardous
Code Purple	Very Unhealthy
Code Red	Unhealthy
Code Orange	Unhealthy for Sensitive Groups
Code Yellow	Moderate
Code Green	Good

On OADs, Code Maroon, Code Purple, Code Red, and Code Orange days, the air pollution levels are expected to exceed the federal ozone standard.

3-12-3. Policy

a. It is APG's policy to make every possible effort to reduce ozone-producing emissions to the environment on forecasted OADs.

b. It is APG's policy to ensure that the Post complies with the following policy regarding fuel station closures on OADs:

MEMORANDUM, AMSSB-DIC (200), 1 May 2002, SUBJECT: Fuel Station Closure on Forecasted Ozone Action Days (OADs).
This memorandum establishes APG policy on actions that will be taken on forecasted OADs.

3-12-4. Requirements

In the following are the specific responsibilities and requirements regarding procedures on OADs.

3-12-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to Ozone Action Days.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment

(1) Send email notification messages to all office on the distribution list on forecasted OADs.
(2) Ensure that OAD flags are displayed at the main entrance to both the Aberdeen and Edgewood Areas on Code Orange, Code Red, Code Purple, and Code Maroon Days.

b. Directorate of Installation Operations

(1) Ensure that OAD flags are displayed at the governmental fueling stations on Code Orange, Code Red, Code Purple, and Code Maroon Days.
(2) Close the governmental fueling stations as per regulations on forecasted Code Orange, Code Red, Code Purple, and Code Maroon OADs. Post signs at the stations regarding the closure.

3-12-4-2. Procedures

a. The two largest contributors to ground level ozone are the use of gasoline-fueled vehicles and the pumping of gasoline. As per the Memorandum concerning Fuel Station Closure on Forecasted OADs, DIO personnel will close the governmental fueling stations at building 4029 in the Aberdeen Area and building E4017 in the Edgewood Area from 0700-1500 on forecasted Code Orange, Code Red, Code Purple, and Code Maroon OADs. Signs will be posted at each of the stations informing employees that the station is closed as the result of an OAD.

b. Fuel will be made available to emergency vehicles on OADs; arrangements must be made through DIO. In the situation when fueling is needed for missions and cannot be obtained after 1500 and prior to 0700, exceptions will be made on a case-by-case basis; arrangements must be made through DIO. A contact number will be displayed at the gas stations in case of an emergency.

c. In the case of more than three days of OADs in succession, DIO may elect to temporally extend the fueling hours of operation for the convenience of missions and APG activities. DIO must coordinate with DSHE if such a case should arise.

d. Compressed Natural Gas (CNG) pumps will remain open during forecasted OADs. It is strongly encouraged that dual fuel vehicles use CNG to help reduce harmful air emissions especially on a declared OAD.

e. As per the Memorandum concerning Fuel Station Closure on Forecasted OADs, DSHE will ensure that flags are displayed at the main entrance to both the Aberdeen and Edgewood Areas on Code Orange, Code Red, Code Purple, and Code Maroon Days. The OAD flag is white with an orange sunburst in the center. DIO will ensure that the flags are displayed at both governmental fueling stations. Each organization may elect to hang OAD flags within their respective organizations to promote awareness and education.

f. DSHE will send e-mail notification messages to all offices on the distribution list on forecasted OADs. Each organization may elect to notify employees within their respective organizations to promote awareness and education.

g. Each organization may elect to curtail non-essential mission operations, grass cutting operations, paint spray booth operations, and other ozone producing activities to help reduce harmful air emissions.

h. All employees are encouraged to do their share for cleaner air by participating in APG's OADs efforts.

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3-13. Range Fires, Brush Fires, Safety Determinations and Open Burns

3-13-1. Scope

The purpose of this section is to describe and list the specific actions necessary for APG to maintain compliance with the Federal and State of Maryland regulations with respect to range fires, brush fires, safety determinations, and open burns – both planned and unplanned.

3-13-2. Background

This section applies to any range fires, brush fires, safety determination, and open burns that occur at APG. Accidental range fires or brush fires are not the subject of this chapter. Safety determination refers to the testing, training, or demonstrations with explosives, propellants, incendiaries, or military devices involving an open flame. An open burn is any fire where material is burned in the open or in receptacle other than a furnace, incinerator, or other equipment connected to a stack or chimney.

The control officer for open burns and safety determinations in Harford County is the Harford County Health Officer. All burns in Harford County must be approved by the Harford County Department of Health. The Central Fire Headquarters referred to in this chapter is the Harford County Central Fires Headquarters, which can be reached at (410) 638-3400.

3-13-3. Policy

a. It is APG's policy to ensure that all burning operations occurring on Post are in full compliance.

b. It is APG's policy to fully comply with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations with respect to range fires, brush fires, safety determinations, and open burns:

(1) COMAR 08.07.04.02 and 08.07.04.03: Open Air Burning
The facility may not engage in open air burning in woodland areas and within 200 feet of woodland, or activities adjacent to or within an area where flammable materials, that could ignite and carry fire to woodland, are located unless the conditions in this chapter are met.

(2) COMAR 08.07.04.09: Burning Ban
Under prolonged or unusual conditions conducive to easy starting and spreading of wildfire, the Director may declare a complete ban on all open burning in woodland or in areas where flammable material is likely to carry fire to woodland, through the state or in a specific area.

(3) COMAR 26.11.07.03: Control Officers May Authorize Certain Open Fires
In Harford County, subject to the review of the Department, the health department officer, upon receipt of an application made on forms provided by the Department or local fire control agency, may issue or approve a permit in writing allowing open fires during the period September 1 through May 31. The permit will contain conditions under which burning can take place.

(4) COMAR 26.11.07.04: Public Officers May Authorize Certain Fires
Public officers, in the performance of their official duties, may set an open fire or give permission for an open fire, with concurrence of the control officer under certain instances.

(5) COMAR 26.11.07.06: Safety Determinations at Federal Facilities
Permits for safety determinations must be issued for federal facilities or other facilities under contract with the federal government. For facilities that perform safety determinations there are many requirements outlined in this COMAR section.

(6) Code of Harford County, 109-12: Air Quality Control
This regulation outlines the local procedures regarding open burns, visible emissions, and recreational fires for any person wishing to conduct burning in Harford County, Maryland.

(7) Harford County Health Department Open Burning Permit
This permit is issued semi-annually for all planned safety determinations at APG. It outlines permit conditions, that if violated, will be cause for revoking open burning permits and may subject APG to penalties.

(8) Title V Permit: Open Burning
The Plant Wide Conditions section of the Title V permit outlines the requirements for APG with regards to open burning and safety determinations.

3-13-4. Requirements

The specific responsibilities, operational and emissions requirements, and reporting procedures applicable to range fires, brush fires, open burns, and safety determinations are outlined in the following.

3-13-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to range fires, brush fires, open burns, and safety determinations.

a. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (DSHE)

(1) Advise facilities as to appropriate actions when a deviation occurs from any of the limitations and conditions within this chapter, State and Federal regulations, and any permits.
(2) Advise facilities as to ideal conditions for air dispersion for particular open burns or safety determinations.
(3) Submit the Semi-Annual Safety Determinations Report to Harford County and the MDE.
(4) Forward applicable correspondence with the MDE and Harford County as well as any permits to the facilities for their records.
(5) Ensure that all burning is conducted in compliance with regulations and permit conditions.

b. Activity Environmental Coordinators

(1) Advise operators/facilities which days are ideal for air dispersion of pollutants during open burns or safety determinations.
(2) Ensure that the control officer, the Harford County Health Officer, is notified 24 hours in advance when a safety determination is to be performed that has a duration of two hours or longer.
(3) Submit semi-annual safety determination information to DSHE.
(4) Notify Harford County as far in advance as possible, but not less than one week, of safety determinations not anticipated six months in advance.
(5) Ensure that the Central Fire Headquarters is notified before and after every burn event.
(6) Forward all correspondence with MDE and Harford County as well as permits to DSHE for air compliance records.

(7) Ensure that all burning is conducted in compliance with regulations and permit conditions.
(8) Apply for permits from the Harford County Department of Heath, Air Pollution Control Office, for open burns so that it can be issued at least 72 hours before the scheduled burn.
(9) Ensure that the activities are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE.

c. Contractors, Governmental Owned Contractor Operated Facilities (GOCO)

(1) Advise operators/facilities which days are ideal for air dispersion of pollutants during open burns or safety determinations.
(2) Ensure that the control officer is notified 24 hours in advance when a safety determination is to be performed that has a duration of two hours or longer.
(3) Submit semi-annual safety determination information to DSHE.
(4) Notify Harford County as far in advance as possible, but not less than one week, of safety determinations not anticipated six months in advance.
(5) Ensure that the Central Fire Headquarters is notified before and after every burn event.
(6) Forward all correspondence with MDE and Harford County as well as permits to DSHE for air compliance records.
(7) Ensure that all burning is conducted in compliance with regulations and permit conditions.
(8) Apply for permits from the Harford County Department of Heath, Air Pollution Control Office, for open burns so that it can be issued at least 72 hours before the scheduled burn.
(9) Ensure that the activities are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE.

d. Non-GOCO

(1) Advise operators/facilities which days are ideal for air dispersion of pollutants during open burns or safety determinations.
(2) Ensure that the control officer is notified 24 hours in advance when a safety determination is to be performed that has a duration of two hours or longer.
(3) Submit semi-annual safety determination information to DSHE via the contractor's COR.
(4) Notify Harford County as far in advance as possible, but not less than one week, of safety determinations not anticipated six months in advance.
(5) Ensure that the Central Fire Headquarters is notified before and after every burn event.
(6) Forward all correspondence with MDE and Harford County as well as permits to DSHE via the contractor's COR for air compliance records.
(7) Ensure that all burning is conducted in compliance with regulations and permit conditions.
(8) Apply for permits from the Harford County Department of Heath, Air Pollution Control Office, for open burns so that it can be issued at least 72 hours before the scheduled burn.
(9) Ensure that the activities are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to DSHE via the contractor's COR.

e. Field Technicians/Range Supervisors

(1) Ensure that the activities are within all limitations and conditions contained within this chapter, State and Federal regulations, and any permits. If any deviations are observed, report immediately to the appropriate AEC or supervisor so that it can be reported to DSHE.
(2) Ensure that all burning is conducted in compliance with regulations and permit conditions.
(3) Conduct open burns and safety determinations on days when conditions are ideal for maximum dispersion of pollutants.
(4) Notify the control officer 24 hours in advance when a safety determination is to be performed that has a duration of two hours or longer.
(5) Notify the Central Fire Headquarters before and after every burn event.

3-13-4-2. Operational and Emissions Requirements

There are several requirements for a facility that performs testing, training, or demonstrations with explosives, propellants, incendiaries, or military devices involving an open flame, commonly referred to as safety determinations, at federal facilities or other facilities under contract with the federal government. The requirements are discussed below.

a. The facility is required to take all responsible precautions to minimize emissions during any safety determination.

b. The safety determinations and open burns must be scheduled, whenever possible, during days when the maximum dispersion of pollutants will be achieved. The dispersion of pollutants vary based on the weather conditions especially the wind speed and temperature. Burning must never be conducted during a heavy overcast day, as these conditions do not allow the smoke to rise and disperse. If a facility/AEC is unsure as to the ideal conditions for a particular exercise, contact DSHE for more information and advice. Safety determinations and open burns shall never be conducted on Ozone Action Code Red, Purple, or Maroon Days (see Section 3-12). If possible, safety determinations and open burns shall not be conducted on Ozone Action Code Orange Days (see Section 3-12).

c. The control officer must be notified at least 24 hours in advance when a safety determination is to be performed that has a duration of 2 hours or longer.

d. A report must be submitted of anticipated or expected safety determinations to the control officer semi-annually on December 15th and June 15th for the periods of January 1st – June 30th and July 1st – December 31st, respectively. DSHE will collect the information and compile the report for APG. Information concerning safety determinations that will be conducted for the period of January 1st – June 30th is due to DSHE no later than December 1st; information concerning safety determinations that will be conducted for the period of July 1st – December 31st is due to DSHE no later than June 1st. The information shall include the time frame during which each known safety determination is to occur, the duration of each safety determination, and general information related to each safety determination.

e. For safety determinations that are not anticipated six months in advance, the Harford County control officer must be notified as far in advance as possible, but not less than one week before the safety determination. A copy of all letters submitted to the County and all permits issued must be forwarded to DSHE for the air compliance records.

f. All types of open burning within Harford County are controlled by the issuance of a permit from the local Department of Health, Air Pollution Control Office. The permit must be applied for at least 72 hours prior to the date of anticipated use. If a tenant is planning to conduct open burning, a letter must be submitted to the Harford County Department of Health prior to the scheduled open burn so that the County has time to issue the permit at least 72 hours before the scheduled burn. A copy of all letters submitted to the County and all permits issued needs to be forwarded to DSHE for the air compliance records.

g. All burning must be done at a distance of 500 yards from any occupied structure or a heavily traveled roadway. Leaves and vegetable or flower garden debris of a property owner may be burned under controlled conditions at a distance of 300 feet from any neighboring habitable dwelling or place where people work or congregate.

h. The material to be burned must have originated on the premise in which it is to be burned. The Edgewood Area and the Aberdeen Area of APG are considered to be separate premises according to the MDE. Thus, material from the Edgewood Area of APG must be burned on the Edgewood Area and likewise for the Aberdeen Area. The following items must not be burned at APG:

- Any material, which produces dense smoke when burned (emissions of greater than 40 percent opacity), including but not limited to tires, asphalt materials and automobile bodies or parts thereof
- Any trash or garbage
- Logs in excess of 12 inches in diameter
- Tree stumps in excess of 6 inches in diameter

i. Open burning is prohibited during the period from June 1st through August 31st of each year unless a Public Officer approves the burn. Public Officers, in the performance of their official duties, may set an open fire or give permission for an open fire, with concurrence of the control officer if the fire is necessary for one the following purposes:

- Prevention of a fire hazard that cannot be abated by other means
- Instruction of public fire fighters or industrial employees under supervision of the appropriate fire control official
- Protection of public health or safety when other means for disposing of hazardous waste materials are not available including the burning of hazardous waste authorized under federal law or COMAR 26.13.02.07
- Burning pest infected crops or products and agricultural burning that is necessary for animal disease control
- Good forest resource management practices as approved by the Department of Natural Resources – Forest Service
- Burning excessive lodging for the purpose of re-cropping as approved by the Department of Agriculture
- Purpose of testing fire fighter training systems fueled by natural gas or propane provided that:
    - The source maintains records of the total amount of fuel used and the date of the open fire,
    - Total combined fuel usage for all systems at the premises does not exceed 5,000 gallons of propane and natural gas combined per week, and
    - Open fire does not constitute a major source of VOC or NOx.

j. Almost all of the open burns occurring at APG take place near a woodland area. When burning occurs in woodlands, within 200 feet of woodlands, or activities are conducted adjacent to or within an area where flammable materials could ignite and carry fire to woodlands, the following conditions apply:

- There must be a natural or constructed fire break, free of flammable materials, at least 10 feet wide completely around the material to be burned;
- Adequate personnel and equipment must be present to prevent the fire from escaping;
- At least one responsible person must remain at the location of the fire until the last spark is out; and
- Burning must occur between the hours of 1600 and 2400 EST/EDT, except when the ground is covered with snow, and then the burning may occur at any time so long as all other requirements are met.

k. If a facility at APG wishes to conduct an open air burn, or prescribed burn, which deviates from the above conditions, the facility must submit a plan for that particular burn to the Maryland Department of Natural Resources (MDNR) for review. The MDNR will then issue a permit for that burning with the required burning conditions and limitations.

l. A permit is not required for such purposes as campfires and cookouts. Demolition by fire requires an open burning permit issued by the Health Department to the local fire company. Special conditions may apply.

m. Just prior to burning or a safety determination, notify the Central Fire Headquarters at (410) 638-3400 and notify them again at the end of each day's burning. All fire-training guidelines shall be followed when burning.

n. Under prolonged or unusual conditions conducive to the easy starting or spread of wildfire, the State may issue a complete ban on all open burning. APG must adhere to these bans.

3-13-4-3. Compliance Deviations

a. If a deviation from any of the limitations or conditions in this chapter is observed, it must be reported immediately to DSHE.

b. DSHE will instruct and advise the facility as to the proper actions that need to be followed to report the deviation to the appropriate agencies.

3-14. Accidental Releases

3-14-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the applicable provisions of the Federal and State of Maryland regulations with respect to accidental releases.

3-14-2. Background

Many materials, chemicals, and activities at APG can cause significant air quality issues if released in large quantities or in an uncontrolled manner. This section applies to unanticipated emissions of a regulated substance or other extremely hazardous substance into the ambient air from a stationary source.

3-14-3. Policy

a. It is APG's policy to take measures to prevent accidental releases.

b. In the case of an accidental release, it is APG's policy to be in compliance with all reporting and procedural requirements.

c. It is APG's policy to ensure that the Post is in compliance with the regulations outlined in Chapter 2 in addition to the following specific regulations with respect to accidental releases:

(1) Code of Federal Regulations Title 40, Part 68: Chemical Accident Prevention Provisions
These regulations focus on chemical accident prevention at facilities using extremely hazardous chemicals. It outlines the requirements for owners or operators of stationary sources concerning the prevention of accidental releases. The Risk Management Plan (RMP) rule is a part of this regulation.

(2) COMAR 26.11.01.07: Malfunctions and Other Temporary Increases of Emissions
This chapter outlines the process for the reporting of excess emissions and deviations.

3-14-4. Requirements

In the case of an accidental release, there are specific responsibilities, processes, and procedures outlined in the following. In addition, there are procedures and policies that need to be followed to prevent accidents.

3-14-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4, the following responsibilities apply specifically to accidental releases.

a. Commander, Installation, Garrison, Aberdeen Proving Ground

Ensure employees' safety, prevention of accidental releases, and implementation of emergency response procedures.

b. Commander, Garrison, Aberdeen Proving Ground

Ensure employees' safety, prevention of accidental releases, and implementation of emergency response procedures.

c. Chief, Environmental Compliance Division, Directorate of Safety, Health and the Environment (ECD-DSHE)

(1) Overall implementation, oversight, and management of the Risk Management Plan, and its revisions as necessary.
(2) Notifying State and Federal regulatory agencies in the event of an accidental release. Forward all appropriate correspondence to the facility for the facility's records.
(3) Include all information from accidental releases in annual reports to the State and Federal agencies, as required.

d. Directorate of Installation Operations (DIO)

Ensure that the operations and maintenance of the Wastewater Treatment Plant and Water Treatment Plant are in compliance with all requirements of the RMP.

e. Chief, Emergency Operations Center, Directorate of Safety, Health and the Environment (EOC-DSHE)

Ensure that the RMP incorporates all necessary and required notification, response, coordination, and communication procedures necessary to effectively manage an accidental release event.

f. Public Affairs Office (PAO)

Communicate with the public and the media regarding accidental releases.

g. Activity Environmental Coordinators

(1) Notify DSHE of any release events, the identity of the chemicals released, along with an estimation of the quantity of each chemical released.
(2) Notify supervisors of any sections of the RMP applicable to the work areas for which they are responsible.

h. Contractors, Government Owned Contractor Operated Facilities (GOCO)

(1) Notify DSHE of any release events, the identity of the chemicals released, along with an estimate of the quantity of each chemical released.
(2) Notify supervisors of any sections of the RMP applicable to the work areas for which they are responsible.

i. Non-GOCO

(1) Notify DSHE via the contractor's COR of any release events, the identity of the chemicals released, along with an estimate of the quantity of each chemical released.
(2) Notify supervisors of any sections of the RMP applicable to the work areas for which they are responsible.

j. Supervisors

(1) Evaluate the potential hazards of chemicals used in the workplace or to which employees may be exposed.

(2) Provide employees with access to Material Safety Data Sheets (MSDS), and require all employees to follow safety instructions described in the MSDS.
(3) Ensure that employees follow appropriate procedures for prevention of releases and respond appropriately in the event of a release.
(4) Provide or arrange for chemical specific training of employees regarding hazards and appropriate protective measures, prior to assigning employees to work with hazardous materials otherwise known as HAZCOM.
(5) Notify the appropriate AEC of any revisions in chemicals, equipment, or operational practices that might require modification of the RMP.
(6) Take corrective actions in response to any notifications from employees regarding unsafe conditions, practices, foreseeable emergencies, and accidental releases.

k. Employees

(1) Know the chemical hazards in the workplace.
(2) Review Material Safety Data Sheets about the chemicals with which the employee works.
(3) Know how to handle these chemicals and the equipment. Be familiar with what to do in the event of an accident, including measures for personnel protection and evacuation.
(4) Notify the appropriate supervisor about any unsafe conditions, practices, foreseeable emergencies, and accidental releases.

3-14-4-2. Process

a. When an accidental release is discovered, the first procedure is recognition, understanding of the potential outcomes and hazards, and notification.

b. Releases, which cannot be handled by trained on-site personnel, must be reported by calling 911. This alerts the APG Fire Department and DSHE.

c. DSHE will communicate all necessary information to the MDE. DSHE and the facility must keep in communication throughout an accidental release to ensure that the MDE is getting the appropriate information in a timely manner.

d. The MDE requires that the following conditions be met for occurrences of excess emissions and deviations including accidental releases:

- Report any deviation from the permit conditions that could endanger human health or the environment, by orally notifying the MDE immediately upon discovery of the deviation;
- Promptly report all occurrences of excess emissions that are expected to last for one hour or longer by orally notifying the MDE of the onset and termination of the occurrence;
- When requested by the MDE, APG will report all deviations from permit conditions, including those attributable to malfunctions, within five days of the request by submitting a written description of the deviation to the MDE. The written report must include the cause, dates and times of the onset and termination of the deviation, as well as the actions planned or taken to reduce, eliminate, and prevent the recurrence of the deviation;
- A report shall be submitted to the MDE summarizing all instances of deviations from permit requirements for calendar quarters in which deviations occurred. The reports are due no later than 30 days after the end of the relevant calendar quarter.

- When requested by the MDE, APG shall submit a written report to the MDE within ten days of receiving the request concerning an occurrence of excess emissions.

e. All emissions from accidental releases must be included in the Annual Emissions Certification. DSHE will ensure that this information is included.

f. DSHE will ensure that all accidental releases are properly documented and appear in any Compliance Certifications.

g. All appropriate correspondence between DSHE and the MDE will be forwarded to the facility for the facility's records.

3-14-4-3. Accident Prevention

a. All possible precautions must be taken to eliminate the possibility of an accidental release.

b. Workers must be familiar with the hazards in the workplace.

c. All operators and AECs must be familiar with MSDSs and know where the MSDSs are stored. MSDSs must be maintained on site for all chemicals, materials, and substances used at a facility.

d. The Risk Management Program Rule (RMP Rule) implements section 112(r) of the Clean Air Act Amendments of 1990. The objective of the RMP Rule is to reduce chemical risk at a local level. It is useful to local fire, police, emergency response personnel, and to citizens in understanding the chemical hazards in a community and the appropriate response. Under this rule, APG was required to develop a Risk Management Program, which was submitted to the EPA as required before June 21, 1999. The RMP applies to the Edgewood Area Wastewater Treatment Plant (WWTP) and Water Treatment Plant (WTP) due to the high volumes of chlorine present at the facility. The RMP includes:

- Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases;
- Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and
- Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g. the fire department) should an accident occur.

e. The Edgewood Area WWTP and WTP must ensure that appropriate training, audits, and updates are completed in compliance with the RMP. These two facilities should consult DSHE for further information.

3-15. Air Pollution Episode

3-15-1. Scope

The purpose of this section is to describe and list the actions necessary for APG to maintain compliance with the applicable provisions of the Federal and State of Maryland regulations during an air pollution episode.

3-15-2. Background

An air pollution episode system establishes standards and procedures to be followed whenever pollution of the air has the potential of reaching an emergency condition if allowed to go unchecked. The MDE has established an air pollution episode system of which APG is a part.

3-15-3. Policy

a. It is APG's policy to comply fully with all regulations and procedures concerning an air pollution episode.

b. It is APG's policy to ensure that the Post follows the appropriate procedures during air pollution episode.

c. It is APG's policy to be in full compliance with all applicable regulatory requirements discussed in Chapter 2 as well as the following specific regulations and procedures:

(1) COMAR 26.11.05: Air Pollution Episode System
This requires facilities to have standby emission reduction plans and outlines the procedures and stages of an air pollution episode.

(2) *Appendix II – Emergency Air Pollution Episode Plan (EAPEP) of Annex G of the Environmental Disaster Plan (EDP) of the APG Disaster Control Plan (DCP)*
This outlines APG's plans, procedures, and actions that be followed in case of an air pollution episode.

3-15-4. Requirements

There are required responsibilities and procedures regarding air pollution episodes as outlined in the following.

3-15-4-1. Responsibilities

In addition to the responsibilities outlined in Section 1-4 of this regulation and in the EAPEP, the following responsibilities apply specifically to an air pollution episode.

a. Chief, Emergency Operations Center, Directorate of Safety, Health and the Environment

(1) Conduct an annual drill of the Emergency Air Pollution Episode Plan.
(2) Update the Emergency Air Pollution Episode Plan annually. Distribute the updated Plan to all appropriate facilities.

3-15-4-2. Procedures and Alert Stages

a. APG has developed a standby emissions reduction plan, consistent with good industrial practice and safe operating procedures, for reducing emissions creating air pollution during an air pollution episode. The plan is outlined in *Appendix II – Emergency Air Pollution Episode Plan (EAPEP) of Annex G of the Environmental Disaster Plan (EDP) of the APG Disaster Control Plan (DCP).*

b. The Governor, the Secretary, or the Secretary's designee determines an air pollution episode. Whenever one of these officials determines that the accumulation of air pollution may attain, is attaining, or has attained a level or levels considered injurious to human health, conditions of air pollution designated as Standby Watch, Health Advisory, Alert, Warning, and Emergency shall be declared.

c. DSHE will receive a coded message from the Maryland State officials announcing the particular pollution episode stage. The implementation message will be passed on to the various organizations and facilities as outlined in *Appendix II to Annex G, APG – Disaster Control Plan*. The specific actions that need to be taken at APG for each of the episode stages is outlined in *Appendix II to Annex G, APG – Disaster Control Plan*. Annually, a drill will be conducted of the APG EAPEP.

d. After the drill is conducted, DSHE will be responsible for updating and amending the EAPEP to ensure that in the case of an actual air pollution episode, the plan will be implemented quickly and without incident.

e. Termination of all stages of the Air Pollution Episode System shall be called by the Secretary or his designee, or by the Governor. DSHE will receive a message announcing the termination of the air episode.

f. MDE shall declare different stages of the air pollution episode based on the severity of the situation. The MDE shall declare a the different stages whenever one or more of the following conditions exists:

(1) Standby Watch Stage

- Forecasted meteorological conditions that are expected to last at least 12 hours which may inhibit pollutant dispersion or increase pollutant concentration.
- A Special Dispersion Statement (SDS) has been issued by the MDE.
- An Air Stagnation Advisory (ASA) has been issued by the MDE. Upon declaration of an Air Stagnation Advisory, the MDE shall make a public announcement of this declaration within 2 hours
- Measured air pollutant concentrations exceed a Pollutant Standards Index (PSI) of 83.

(2) Health Advisory Stage

The MDE shall declare a Health Advisory when measured air pollutant concentrations cause the PSI to exceed 100.

(3) Alert Stage

- An Alert shall be declared by the Secretary or his designee when any one or more of the following pollutant levels in Table 3-15-1, below, is attained concurrent with:

- A judgment by the MDE that the pollutant level is representative of air quality in a significant portion of the region. The MDE shall consult the air pollution control agencies of the affected jurisdictions to help evaluate local situations.
- Meteorological conditions are such that pollutant dispersion is expected to be inhibited for 12 or more hours.

Table 3-15-1: Alert Stage Pollutant levels

Pollutant	Level
Sulfur dioxide	0.3 ppm 24 hour average
PM(10)	180 micrograms/cubic meter 24 hour average
Carbon monoxide	15 ppm 8 hour average
Ozone	0.2 ppm 1 hour average
Nitrogen dioxide	0.6 ppm 1 hour average or 0.15 ppm 24 hour average

(4) Warning Stage

- A Warning shall be declared by the Secretary or his designee when any one or more of the following pollutant levels in Table 3-15-2, below, is attained concurrent with:

  - A judgment by the MDE that the pollutant level is representative of air quality in a significant portion of the region. The MDE shall consult the air pollution control agencies of the affected jurisdictions to help evaluate local situations.
  - Meteorological conditions are such that pollutant dispersion is expected to be inhibited for 12 or more hours.

Table 3-15-2: Warning Stage Pollutant levels

Pollutant	Level
Sulfur dioxide	0.6 ppm 24 hour average
PM(10)	360 micrograms/cubic meter 24 hour average
Carbon monoxide	30 ppm 8 hour average
Ozone	0.4 ppm 1 hour average
Nitrogen dioxide	1.2 ppm 1 hour average or 0.3 ppm 24 hour average

(5) Emergency Stage

- An Emergency shall be declared by the Governor when any one or more of the following pollutant levels in Table 3-15-3, below, is attained concurrent with:
    - A judgment by the MDE that the pollutant level is representative of air quality in a significant portion of the region. The MDE shall consult the air pollution control agencies of the affected jurisdictions to help evaluate local situations.
    - Meteorological conditions are such that this condition can be expected to continue for 12 or more hours.

Table 3-15-3: Emergency Stage Pollutant levels

Pollutant	Level
Sulfur dioxide	0.8 ppm 24 hour average
PM(10)	480 micrograms/cubic meter 24 hour average
Carbon monoxide	40 ppm 8 hour average
Ozone	0.5 ppm 1 hour average
Nitrogen dioxide	1.6 ppm 1 hour average or 0.4 ppm 24 hour average

g. The EAPEP contains detailed information regarding the specifics of an air emergency episode as it relates to APG.

APPENDIX A

REFERENCES

Section I

Required Publications

ACSIM Memorandum
"Elimination of the Dependency on Ozone Depleting Chemicals (ODCs) in the Army Facilities"

Assistant Secretary of the Army (Installations, Logistics, and the Environment)
"Ozone-Depleting Chemicals (ODC) Elimination at Army Installations," 13 Feb 96.

Code of Federal Regulations 40 CFR Parts 50-87
Air Programs

Code of Harford County, Maryland, Section 109-12
Air Quality Control

Code of Maryland Regulations (COMAR) 26.11
Air Quality

Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health)
"Disposition of Excess Ozone-Depleting Substances (ODS) at Army Installations," 18 Oct 94

HDQA Letter 200-90-1
Eliminating or Minimizing Atmospheric Emissions of Ozone-Depleting Substances

Implementation of the Requirements of the National Defense Authorization Act for Fiscal Year 1993, 20 May 1993

Strategic Guidance and Planning for Eliminating Ozone-Depleting Chemicals from U.S. Army Applications, Nov 95.

Section II

Related Publications

AR 40-5
Preventive Medicine

AR 200-1
Environmental Protection and Enhancement

APGR 200-1
Environmental Quality Control at APG

DA PAM 200-1, Chapter 6
Air Program

DOD Instruction 4715.6
Environmental Compliance

Executive Order 12437
Fuel Use Prohibitions

Executive Order 13101
Greening the Government through Waste Prevention, Recycling, and Federal Acquisition

Executive Order 13123
Greening the Government Through Efficient Energy Management

Executive Order 13148
Greening the Government Through Leadership in Environmental Management

Executive Order 13149
Greening the Government Through Federal Fleet and Transportation Efficiency

Public Law 88-203
The Clean Air Act as amended.

Public Law 94-580
Resource Conservation and Recover Act

Public Law 94-469
Toxic Substances Control Act

Public Law 96-510
Comprehensive Environmental Response, Compensation, and Liability Act

Public Law 101-508
Pollution Prevention Act (PPA) of 1990

APPENDIX B

PERMITTING REGULATIONS

Section I

Permits to Construct/Registration Permit Exemptions (COMAR 26.11.02.10)

A. Generating stations constructed by electric companies;

B. Motor vehicles, steamships, tugs, and railroad locomotives;

C. Fuel-burning equipment and space heaters using gaseous fuels or No. 1 or No. 2 fuel oil with a heat input less than 1,000,000 Btu (1.06 gigajoules) per hour

D. Fuel-burning equipment using solid fuel with a heat input of less than 350,000 Btu (0.37 gigajoule) per hour;

E. Stationary internal combustion engines with less than 1,000 brake horsepower (746 kilowatt) operating less than 2,000 hours per year and all stationary internal combustion engines with less than 500 brake horsepower (373 kilowatt); for sources that install more than one stationary internal combustion engine over a 5-year period, the above exemptions do not apply if the total potential to emit emissions from the engines installed over the 5-year period exceeds the major source threshold of 25 tons/year NOx or VOC;

F. Bench scale laboratory equipment used exclusively for chemical or physical analysis or experimentation;

G. Portable brazing, soldering, or welding equipment;

H. Comfort air conditioning or comfort ventilating systems which are not designed to remove emissions generated, by or released from specific units of equipment;

I. Water cooling towers and water cooling ponds unless used for evaporative cooling of water from barometric jets or barometric condensers, or used in conjunction with an installation requiring a permit to operate;

J. Equipment used exclusively for steam cleaning;

K. Grain, metal, plastic, or mineral extrusion presses;

L. Porcelain enameling drying ovens;

M. Unheated VOC dispensing containers or unheated VOC rinsing containers of 60 gallons (227 liters) capacity or less;

N. Equipment used for hydraulic or hydrostatic testing;

O. The following equipment or an exhaust system or collector servicing exclusively this equipment:

(1) Blast cleaning equipment using a suspension of abrasive in water,

(2) Commercial bakery ovens with a rated heat input capacity of less than 2 MMBtu per hour,

(3) Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity, or any combination of these,

(4) Confection cookers where the products are edible and intended for human consumption,

(5) Drop hammers or hydraulic presses for forging or metal working,

(6) Die casting machines,

(7) Photographic process equipment used to reproduce an image upon sensitized material through the use of radiant energy,

(8) Equipment for drilling, carving, cutting, routing, turning, sawing, plaining, spindle sanding, or disc sanding of wood or wood products,

(9) Equipment for surface preparation of metals by use of aqueous solutions, except for acid solutions,

(10) Equipment for washing or drying products fabricated from metal or glass, provided that no VOC is used in the process and that no oil or solid fuel is burned,

(11) Laundry dryers, extractors, or tumblers for fabrics cleaned with only water solution or bleach or detergents,

(12) Containers, reservoirs, or tanks used exclusively for electrolytic plating work, or electrolytic polishing, or electrolytic stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals;

(13) Breweries with an annual beer production less than 60,000 barrels, and

(14) Municipal solid waste landfills that have a design capacity of less than 500,000 tons of municipal solid waste and that are not major sources;

P. Natural draft hoods or natural draft ventilators;

Q. Containers, reservoirs, or tanks used exclusively for:

(1) Dipping operations for coating objects with oils, waxes, or greases, where no VOC is used,

(2) Dipping operations for applying coatings of natural or synthetic resins which contain no VOC,

(3) Storage of butane, propane or liquefied petroleum, or natural gas,

(4) Storage of lubricating oils,

(5) Unheated storage of VOC with an initial boiling point of 300°F (149°C) or greater,

(6) Storage of Numbers 1, 2, 4, 5, and 6 fuel oil and aviation jet engine fuel,

(7) Storage of motor vehicle gasoline, having an individual tank capacity of 2,000 gallons or less,

(8) The storage of VOC normally used as solvents, diluents, thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins, or other surface coatings and having a capacity of 2,000 gallons (7.6 cubic meters) or less;

R. Gaseous fuel-fired or electrically heated furnaces for heat treating glass or metals, the use of which does not involve molten materials;

S. Crucible furnaces, pot furnaces, or induction furnaces, with a capacity of 1,000 pounds (454 kilograms) or less each, in which no sweating or distilling is conducted, or any fluxing conducted, using chloride, fluoride, or ammonium compounds and from which only the following metals are poured or in which only the following metals are held in a molten state:

(1) Aluminum or any alloy containing over 50 percent aluminum, if no gaseous chloride compounds, chlorine, aluminum chloride, or aluminum fluoride is used,

(2) Magnesium or any alloy containing over 50 percent magnesium,

(3) Lead or any alloy containing over 50 percent lead,

(4) Tin or any alloy containing over 50 percent tin,

(5) Zinc or any alloy containing over 50 percent zinc,

(6) Copper, or

(7) Precious metals;

T. Vacuum cleaning systems used exclusively for industrial, commercial, or residential house-keeping purposes;

U. Charbroilers and pit barbecues as defined in COMAR 26.11.18.01 with a total cooking area of 5 square feet (0.46 square meter) or less;

V. Hazardous waste incinerators, as defined in COMAR 26.13.01.03B(33), and for which a hazardous waste facility permit has been applied for or issued by the Department under COMAR 26.13.07;

W. Sheet-fed letter or lithographic printing presses with a cylinder width of less than 18 inches; and

X. Other installations if:

(1) The installation is not subject to any source-specific State or federal emission standard,

(2) The expected uncontrolled emissions are less than 1 ton per calendar year of each pollutant for which there is a federal ambient air quality standard or which is a Class II toxic air pollutant. A Class II TAP is any substance that is not listed in a Class I TAP, for which there is no ambient air quality standard, that is not a simple asphyxiant or nuisance particulate, and that is:

(a) a health hazard as that term is defined at 29 CFR 1915.1200 (July 1, 1994); or

(b) listed in COMAR 26.11.16.07B as an existing source Class II TAP, either individually or as a member of a group of substances.

(3) The emissions contain not more than 1 pound per day of a Class I toxic air pollutant. Class I toxic air pollutants are listed in COMAR 26.11.16.06.

Section II

Title V Permit Exemptions (COMAR 26.11.03.04)

(1) Space heaters operating by direct heat transfer and used solely for comfort heat;

(2) Brazing, soldering, welding equipment and cutting torches related to manufacturing and construction activities that emit HAP metals and not directly related to plant maintenance upkeep and repair or maintenance shop activities;

(3) Lubricating oil storage tanks;

(4) Unheated storage tanks containing VOC with an initial boiling point of 300°F (149°C) or greater;

(5) Storage tanks containing Numbers 1, 2, 4, 5, and 6 fuel oil and aviation jet engine fuel;

(6) First aid and emergency medical care provided at the facility, including related activities such as sterilization and medicine preparation used in support of a manufacturing or production process;

(7) Certain recreational equipment and activities, such as fireplaces, barbecue pits and cookers, fireworks displays, and kerosene fuel use;

(8) Potable water treatment equipment, not including air stripping equipment;

(9) Non-contact water (i.e., water that has not been in direct contact with process fluids) cooling towers except as regulated under §112 of the Clean Air Act;

(10) Firing and testing of military weapons and explosives;

(11) Emission resulting from the use of explosives for blasting at quarrying operations and from the required disposal of boxes used to ship the explosive;

(12) All sources listed in COMAR 26.11.02.10 (Section 2.1.5 of this regulation) except §§A, B, F, J, N, O(1), O(5), O(11), T, and V;

(13) Laboratory fume hoods and vents; and

(14) After identification of the emissions unit and agreement by the Department, any other emissions unit that is not subject to an applicable requirement of the Clean Air Act.

Sources located at APG that are not under the direct control of the U.S. Army, such as the AAFES facilities, are exempt from the Part 70 permitting process.

APPENDIX C

GENERAL CONFORMITY REGULATIONS

Section I

General Conformity Subpart C Exemptions (40CFR 93.125 (c))

(1) Actions where the total of direct and indirect emissions are below the emissions levels of 25 tons/year

(2) Actions which would result in no emissions increase or an increase in emissions that is clearly de minimis:

(i) Judicial and legislative proceedings.
(ii) Continuing and recurring activities such as permit renewals where activities conducted will be similar in scope and operation to activities currently being conducted.
(iii) Rulemaking and policy development and issuance.
(iv) Routine maintenance and repair activities, including repair and maintenance of administrative sites, roads, trails, and facilities.
(v) Civil and criminal enforcement activities, such as investigations, audits, inspections, examinations, prosecutions, and the training of law enforcement personnel.
(vi) Administrative actions such as personnel actions, organizational changes, debt management or collection, cash management, internal agency audits, program budget proposals, and matters relating to the administration and collection of taxes, duties and fees.
(vii) The routine, recurring transportation of materiel and personnel.
(viii) Routine movement of mobile assets, such as ships and aircraft, in home port reassignments and stations (when no new support facilities or personnel are required) to perform as operational groups and/or for repair or overhaul.
(ix) Maintenance dredging and debris disposal where no new depths are required, applicable permits are secured, and disposal will be at an approved disposal site.
(x) Actions, such as the following, with respect to existing structures, properties, facilities and lands where future activities conducted will be similar in scope and operation to activities currently being conducted at the existing structures, properties, facilities, and lands; for example, relocation of personnel, disposition of federally-owned existing structures, properties, facilities, and lands, rent subsidies, operation and maintenance cost subsidies, the exercise of receivership or conservatorship authority, assistance in purchasing structures, and the production of coins and currency.
(xi) The granting of leases, licenses such as for exports and trade, permits, and easements where activities conducted will be similar in scope and operation to activities currently being conducted.
(xii) Planning, studies, and provision of technical assistance.
(xiii) Routine operation of facilities, mobile assets and equipment.
(xiv) Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of the transfer.
(xv) The designation of empowerment zones, enterprise communities, or viticultural areas.
(xvi) Actions by any of the Federal banking agencies or the Federal Reserve Banks, including actions regarding charters, applications, notices, licenses, the supervision or examination of depository institutions or depository institution holding companies, access to the discount window, or the provision of financial services to banking organizations or to any department, agency or instrumentality of the United States.
(xvii) Actions by the Board of Governors of the Federal Reserve System or any Federal Reserve Bank necessary to effect monetary or exchange rate policy.
(xviii) Actions that implement a foreign affairs function of the United States.
(xix) Actions (or portions thereof) associated with transfers of land, facilities, title, and real

properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific, reasonable condition is met, such as promptly after the land is certified as meeting the requirements of CERCLA, and where the Federal agency does not retain continuing authority to control emissions associated with the lands, facilities, title, or real properties.

(xx) Transfers of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity and assignments of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity for subsequent deeding to eligible applicants.

(xxi) Actions by the Department of the Treasury to effect fiscal policy and to exercise the borrowing authority of the United States.

(3) Actions where the emissions are not reasonably foreseeable, such as the following:

(i) Initial Outer Continental Shelf lease sales which are made on a broad scale and are followed by exploration and development plans on a project level.

(ii) Electric power marketing activities that involve the acquisition, sale and transmission of electric energy.

(4) Actions which implement a decision to conduct or carry out a conforming program such as prescribed burning actions which are consistent with a conforming land management plan.

Section II

General Conformity Subpart D Exemptions (40CFR 93.125 (d))

(1) The portion of an action that includes major new or modified stationary sources that require a permit under the new source review (NSR) program (section 173 of the Act) or the prevention of significant deterioration program (title I, part C of the Act).

(2) Actions in response to emergencies or natural disasters such as hurricanes, earthquakes, etc., which are commenced on the order of hours or days after the emergency or disaster and, if applicable, which meet the requirements of 40 CFR 93.153(e).

(3) Research, investigations, studies, demonstrations, or training (other than those exempted under paragraph (c)(2) of this section), where no environmental detriment is incurred and/or, the particular action furthers air quality research, as determined by the State agency primarily responsible for the applicable SIP;

(4) Alteration and additions of existing structures as specifically required by new or existing applicable environmental legislation or environmental regulations (e.g., hush houses for aircraft engines and scrubbers for air emissions).

(5) Direct emissions from remedial and removal actions carried out under the Comprehensive Environmental Response, Compensation and Liability Act and associated regulations to the extent such emissions either comply with the substantive requirements of the PSD/NSR permitting program or are exempted from other environmental regulation under the provisions of CERCLA and applicable regulations issued under CERCLA.

APPENDIX D

TOXIC AIR POLLUTANTS

Section I

Class I Toxic Air Pollutant (COMAR 26.11.16.06)

A. Known Human Carcinogens.

	CAS Number	Substance
(1)	92-67-1	4-Aminobiphenyl;
(2)	--	Analgesic mixtures containing phenacetin;
(3)	--	Arsenic and inorganic arsenic compounds;
(4)	--	Asbestos;
(5)	466-86-6	Azathioprine (Purine);
(6)	71-43-2	Benzene;
(7)	92-87-5	Benzidine;
(8)	55-98-1	1,4-Butanediol dimethanesulphonate;
(9)	305-03-3	Chlorambucil;
(10)		1-(2 Chloroethyl)-3-(4 Methylcyclohexyl)-1 nitrosourea (methyl CCNU);
(11)	494-03-1	N,N-Bis(2-chloroethyl)-2-napthylamine (chlornaphazine);
(12)	542-88-1	Bis(chloromethyl) ether;
(13)	107-30-2	Chloromethyl methyl ether;
(14)	--	Chromium compounds in the oxidation state VI (i.e., hexavalent chromium compounds), except sodium dichromate;
(15)	--	Coke oven emissions;
(16)	50-18-0	Cyclophosphamide;
(17)	56-53-1	Diethylstilbesterol (DES);
(18)	12510-42-8	Erionite;
(19)	--	Estrogens (conjugated);
(20)	148-82-3	Melphalan;
(21)	298-81-7	Methoxsalen;
(22)	505-60-2	Mustard gas;
(23)	91-59-8	2-Naphthylamine;
(24)	1314-20-1	Thorium dioxide;
(25)	299-75-2	Treosulphan;
(26)	75-01-4	Vinyl chloride.

B. Probable Human Carcinogens.

	CAS Number	Substance
(1)	60-35-5	Acetamide;
(2)	53-96-3	2-Acetylaminofluorene;
(3)	79-06-1	Acrylamide;
(4)	107-13-1	Acrylonitrile;
(5)	50-76-0	Actinomycin D;
(6)	23214-92-8	Adriamycin;
(7)	3688-53-7	AF-2: (2-(2-Furye)-3-(5-Nitro-2-Furye) Acrylamide);

	CAS Number	Substance
(8)	--	Aflatoxins;
(9)	117-79-3	2-Aminoanthraquinone;
(10)	60-09-3	p-Aminoazobenzene;
(11)	82-28-0	1-Amino-2-methylanthraquinone;
(12)	26148-68-5	A-a-C (2-Amino-9H-pyrido [2,3-b] indole;
(13)	61-82-5	Amitrole;
(14)	90-04-0	o-Anisidine;
(15)	134-28-2	o-Anisidine hydrochloride;
(16)	140-57-8	Aramite;
(17)	492-80-8	Auramine;
(18)	56-55-3	Benz(a)anthracene;
(19)	50-32-8	Benzo(a)pyrene;
(20)	204-99-2	Benzo(b)fluoranthene;
(21)	98-07-7	Benzotrichloride;
(22)	--	Beryllium and compounds;
(23)	154-93-8	Bischloroethyl nitrosourea;
(24)	106-99-0	1,3-Butadiene;
(25)	25013-16-5	Butylated hydroxyanisole (BHA);
(26)	--	Cadmium and compounds;
(27)	56-23-5	Carbon tetrachloride;
(28)	9000-07-1	Carrageen: degraded;
(29)	56-75-7	Chloramphenicol;
(30)	13010-47-4	1-(2-Chloroethyl)-3-Cyclohexyl-1-nitrosourea (CCNU);
(31)	67-66-3	Chloroform;
(32)	--	Chlorophenoxy herbicides;
(33)	95-83-0	4-Chloro-o-phenylenediamine;
(34)	--	p-Chloro-o-toluidene;
(35)	15663-27-1	Cisplatin;
(36)	120-71-8	p-Cresidine;
(37)	135-20-6	Cupferron;
(38)	14901-08-7	Cycasin;
(39)	4342-03-4	Dacarbazine;
(40)	50-29-3	DDT (1,1,1-Trichloro-2,2-Bis(p-chloro- phenyl)-ethane);
(41)	615-05-4	2,4-Diaminoanisole;
(42)	39156-41-7	2,4-Diaminoanisole sulfate;
(43)	95-80-7	2,4-Diaminotoluene;
(44)	226-36-8	Dibenz (a,h) acridine;
(45)	224-42-0	Dibenz (a,j) acridine;
(46)	53-70-3	Dibenz (a,h) anthracene;
(47)	194-59-2	7H-Dibenzo (c,g) carbazole;
(48)	189-64-0	Dibenzo (a,h) pyrene;
(49)	189-55-9	Dibenzo (a,i) pyrene;
(50)	96-12-8	1,2-Dibromo-3-chloropropane (DBCP);
(51)	106-46-7	p-Dichlorobenzene;
(52)	91-94-1	3,3'-Dichlorobenzidine;
(53)	107-06-2	1,2-Dichloroethane;
(54)	542-75-6	1,3-Dichloropropene (technical grade);
(55)	87-17-3	Dienoestrol;
(56)	1464-53-3	Diepoxybutane;
(57)	117-81-7	Di(2-ethylhexyl)phthalate;
(58)	66-67-5	Diethyl sulfate;
(59)	119-90-4	3,3'-Dimethoxybenzidine;
(60)	60-11-7	4-Dimethylaminoazobenzene;
(61)	119-93-7	3,3'-Dimethylbenzidine;
(62)	79-44-7	Dimethylcarbamoyl chloride;

	CAS Number	Substance
(63)	57-14-7	1,1-Dimethylhydrazine;
(64)	77-78-1	Dimethyl sulfate;
(65)	123-91-1	1,4-Dioxane;
(66)	--	Dioxins and furans;
(67)	1937-37-7	Direct Black 38;
(68)	2602-46-2	Direct Blue 6;
(69)	16071-86-6	Direct Brown 95;
(70)	106-89-8	Epichlorohydrin;
(71)	--	Estrogens (unconjugated);
(72)	8056-51-7	Ethinyloestradiol;
(73)	140-88-5	Ethyl acrylate;
(74)	106-93-4	Ethylene dibromide (1,2-Dibromo-ethane) (EDB);
(75)	75-21-8	Ethylene oxide;
(76)	96-45-7	Ethylene thiourea;
(77)	759-23-9	N-Ethyl-N-Nitrosourea;
(78)	50-00-0	Formaldehyde;
(79)	67730-11-4	Glu-P-1 (2-Amino-6-methyldipyrido (1,2-a: 3',2'-d] imidazole;
(80)	67730-12-5	Glu-P-2 (2-Aminodipyrido [1,2-a: 3',2'-d] imidazole;
(81)	126-07-8	Griseofulvin;
(82)	118-74-1	Hexachlorobenzene;
(83)	680-31-9	Hexamethylphosphoramide;
(84)	302-01-2	Hydrazine;
(85)	10034-93-2	Hydrazine sulfate;
(86)	122-66-7	Hydrazobenzene;
(87)	193-39-5	Indeno(1,2,3-cd)pyrene;
(88)	--	IQ (2-Amino-3-methylimidazo [4,5-f] quinoline;
(89)	9004-66-4	Iron dextran complex;
(90)	143-50-0	Kepone;
(91)	301-04-2	Lead acetate;
(92)	7446-27-7	Lead phosphate;
(93)	58-89-9	Lindane and other hexachlorocyclohexane isomers;
(94)	--	MeA-a-C (2-Amino-3-methyl-9H-pyrido [2,3-b] indole);
(95)	72-33-3	Mestranol;
(96)	484-20-8	5-Methoxypsoralen;
(97)	75-55-8	2-Methylaziridine;
(98)	101-14-4	4,4'-Methylenebis (2-chloroaniline) (MOCA);
(99)	101-61-1	4,4'-Methylenebis (N,N'-dimethyl) benzenamine;
(100)	107-77-9	4,4'-Methylenedianiline;
(101)	13552-44-8	4,4'-Methylenedianaline dihydrochloride;
(102)	78-88-4	Methyl iodide;
(103)	684-93-5	N-Methyl-N-nitrosourea;
(104)	615-53-2	N-Methyl-N-nitrosourethane;
(105)	75-09-2	Methylene chloride;
(106)	443-48-1	Metronidazole;
(107)	90-94-8	Michler's ketone;
(108)	2385-85-5	Mirex;
(109)	--	Nickel and compounds;
(110)	139-13-9	Nitriloacetic acid;
(111)	1836-75-5	Nitrofen;
(112)	51-75-2	Nitrogen mustard;
(113)	99-59-2	5-Nitro-o-anisidine;
(114)	79-46-9	2-Nitropropane;
(115)	1116-54-7	N-Nitrosodiethanolamine;
(116)	55-18-5	N-Nitrosodiethylamine;
(117)	62-75-9	N-Nitrosodimethylamine;

	CAS Number	Substance
(118)	924-16-3	N-Nitrosodi-n-butylamine;
(119)	621-64-7	N-Nitrosodi-n-propylamine;
(120)	156-10-5	p-Nitrosodiphenylamine;
(121)	--	3-(N-Nitrosomethylamino) propianitrile;
(122)	--	4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK);
(123)	4549-40-0	N-Nitrosomethylvinylamine;
(124)	59-89-2	N-Nitrosomorpholine;
(125)	759-73-9	N-Nitroso-n-ethylurea;
(126)	684-93-5	N-Nitroso-n-methylurea;
(127)	621-64-7	N-Nitroso-n-propylamine;
(128)	16543-55-8	N-Nitrosonornicotine;
(129)	100-75-4	N-Nitrosopiperidine;
(130)	930-55-2	N-Nitrosopyrrolidine;
(131)	13256-22-9	N-Nitrososarcosine;
(132)	68-22-4	Norethisterone;
(133)	50-28-2	Oestradiol-17-beta;
(134)	53-16-7	Oestrone;
(135)	434-07-1	Oxymethalone;
(136)	62-44-2	Phenacetin;
(137)	94-78-0	Phenazopyridine;
(138)	136-40-3	Phenazopyridine hydrochloride;
(139)	50-06-6	Phenobarbital;
(140)	57-41-0	Phenytoin;
(141)	630-93-3	Phenytoin, sodium salt;
(142)	--	Polybrominated biphenyls (PBBs);
(143)	--	Polychlorinated biphenyls (PCBs);
(144)	7758-01-2	Potassium bromate;
(145)	671-16-9	Procarbazine;
(146)	366-70-1	Procarbazine hydrochloride;
(147)	57-83-0	Progesterone;
(148)	1120-71-4	1,3-Propane sultone;
(149)	57-57-8	B-Propiolactone;
(150)	75-56-9	Propylene oxide;
(151)	51-52-5	Propylthiouracil;
(152)	50-55-5	Reserpine;
(153)	81-07-2	Saccharin;
(154)	94-59-7	Safrole;
(155)	7446-34-6	Selenium sulfide;
(156)	18883-66-4	Streptozotocin;
*(157)	132-27-4	Sodium orthophenylphenate;
(158)	95-06-7	Sulfallate;
(159)	62-55-5	Thioacetamide;
(160)	62-56-6	Thiourea;
(161)	584-84-9	2,4-Toluene diisocyanate;
(162)	95-53-4	o-Toluidine;
(163)	636-21-5	o-Toluidine hydrochloride;
(164)	8001-35-2	Toxaphene;
(165)	88-06-2	2,4,6-Trichlorophenol;
(166)	68-76-8	Tris (aziridinyl) -para-benzoquinone (triaziquone);
(167)	52-24-4	Tris (1-aziridinyl) phosphine sulfide;
(168)	126-72-7	Tris (2,3-dibromopropyl) phosphate;
(169)	66-75-1	Uracil mustard;
*(170)	51-79-6	Urethane;
*(172)	593-60-2	Vinyl bromide.

* Entry (157) above is not in alphabetical sequence, and there is no entry (171). This is a result of the specific instructions in the amendment adopted effective November 9, 1992 (19:22 Maryland Register 1990).

C. Potential Human Carcinogens.

	CAS Number	Substance
(1)	75-07-0	Acetaldehyde;
(2)	97-56-3	o-Aminoazotoluene;
(3)	712-68-5	2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole;
(4)	115-02-6	Azaserine;
(5)	205-82-3	Benzo(j)fluoranthene;
(6)	205-08-9	Benzo(k)fluoranthene;
(7)	1694-09-3	Benzyl violet 4b;
(8)	3068-88-0	B-Butyrolactone;
(9)	6358-53-8	Citrus Red No. 2;
(10)	20830-81-3	Daunomycin;
(11)	613-35-4	N,N-Diacetylbenzidine;
(12)	101-80-4	4,4'-Diaminodiphenyl ether;
(13)	192-65-4	Dibenzo(a,e)pyrene;
(14)	191-30-0	Dibenzo (a,l) pyrene;
(15)	28434-86-8	3,3'-Dichloro-4,4'-diaminodiphenyl ether;
(16)	1615-80-1	1,2-Diethylhydrazine;
(17)	101-90-6	Diglycidyl resorcinol ether;
(18)	94-58-6	Dihydrosafrole;
(19)	55738-54-0	trans-2((Dimethylamino) methylimino)-5-(2-(5- nitro-2-furyl)vinyl)-1,3,4-oxadiazole;
(20)	540-73-8	1,2-Dimethylhydrazine;
(21)	62-50-0	Ethyl methanesulphonate;
(22)	3570-75-0	2-(2-Formylhydrazino)-4-(5-nitro-2-furyl) thiazole;
(23)	765-34-4	Glyciadaldehyde;
(24)	16568-02-8	Gryomitrin;
(25)	120-62-7	Isosafrole;
(26)	303-34-4	Lasiocarpine;
(27)	531-76-0	Merphalan;
(28)	590-96-5	Methylazoxymethanol;
(29)	592-62-1	Methylazoxymethanol acetate;
(30)	3697-24-3	5-Methylchrysene;
(31)	838-88-0	4,4'-Methylene bis(2-methylaniline);
(32)	66-27-3	Methyl methanesulphonate;
(33)	129-15-7	2-Methyl-1-nitroanthraquinone;
(34)	70-25-7	N-Methyl-N'-nitro-N-nitrosoguanidine;
(35)	64091-91-4	4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone;
(36)	56-04-2	Methylthiouracil;
(37)	50-07-7	Mitromycin C;
(38)	315-22-0	Monocrotaline;
(39)	139-91-3	5-(Morpholinomethyl)-3-((5-nitrofurfurylidene)amino)-2-oxazolidinone;
(40)	3771-19-5	Nafenopin;
(41)	61-57-4	Niridazole;
(42)	602-87-9	5-Nitroacenaphthene;
(43)	555-84-9	1-(5-Nitrofurfurylidene)amino)-2-imidazolidinone;
(44)	531-82-8	N-(4-(5-Nitro-2-furyl)-2-thiazolyl)acetamide;
(45)	126-85-2	Nitrogen mustard N-oxide;
(46)	302-70-5	Nitrogen mustard N-oxide hydrochloride;
(47)	10595-95-6	N-Nitrosomethylethylamine;

	CAS Number	Substance
(48)	615-53-2	N-Nitroso-N-methylurethane;
(49)	2646-17-5	Oil orange SS;
(50)	794-93-4	Panfuran S (Dihydroxymethylfuratrizine);
(51)	59-96-1	Phenoxybenzamine;
(52)	63-92-3	Phenoxybenzamine hydrochloride;
(53)	3761-53-3	Ponceau MX;
(54)	3564-09-8	Ponceau 3R;
(55)	128-44-9	Sodium saccharin;
(56)	10048-13-2	Sterigmatocystin;
(57)	96-09-3	Styrene oxide;
(58)	--	Testosterone and its esters;
(59)	139-65-1	4,4'-Thiodianiline;
(60)	68808-54-8	Trp-P-1;
(61)	62450-07-1	Trp-P-2;
(62)	72-57-1	Trypan blue (commercial grade).

Section II

Class II Toxic Air Pollutant (COMAR 26.11.16.07(B))

	CAS Number	Substance	Compliance Date
(1)	53-96-3	Acetamide, N-9H-fluoren-2-yl-	1-1-92;
(2)	67-64-1	Acetone	1-1-92;
(3)	75-86-5	Acetone cyanohydrin	7-1-90;
(4	1752-30-3	Acetone thiosemicarbazide	7-1-90;
(5)	75-05-8	Acetonitrile	1-1-92;
(6)	107-02-8	Acrolein	7-1-90;
(7)	79-10-7	Acrylic acid	1-1-92;
(8)	814-68-6	Acrylyl chloride	7-1-90;
(9)	111-69-3	Adiponitrile	7-1-90;
(10)	116-06-3	Aldicarb	7-1-90;
(11)	309-00-2	Aldrin	7-1-90;
(12)	107-18-6	Allyl alcohol	7-1-90;
(13)	107-05-1	Allyl chloride	1-1-92;
(14)	107-11-9	Allylamine	7-1-90;
(15)	20859-73-8	Aluminum phosphide	7-1-90;
(16)	60-09-3	4-Aminoazobenzene	1-1-92;
(17)	54-62-6	Aminopterin	7-1-90;
(18)	78-53-5	Amiton	7-1-90;
(19)	3734-97-2	Amiton oxalate	7-1-90;
(20)	7664-41-7	Ammonia	7-1-90;
(21)	16919-58-7	Ammonium chloroplatinate	7-1-90;
(22)	7783-20-2	Ammonium sulfate (solution)	1-1-92;
(23)	300-62-9	Amphetamine	7-1-90;
(24)	62-53-3	Aniline	7-1-90;
(25)	88-05-1	Aniline, 2,4,6-trimethyl-	7-1-90;
(26)	104-94-9	p-Anisidine	1-1-92;
(27)	120-12-7	Anthracene	1-1-92;
(28)	--	Antimony and compounds	1-1-92;
(29)	7783-70-2	Antimony pentafluoride	7-1-90;
(30)	1397-94-0	Antimycin A	7-1-90;

	CAS Number	Substance	Compliance Date
(31)	86-88-4	Antu	7-1-90;
(32)	--	Arsenic (organic compounds only)	1-1-92;
(33)	7784-42-1	Arsine	7-1-90;
(34)	2642-71-9	Azinphos-ethyl	7-1-90;
(35)	86-50-0	Azinphos-methyl	7-1-90;
(36)	--	Barium and its soluble compounds	1-1-92;
(37)	98-87-3	Benzal chloride	7-1-90;
(38)	55-21-0	Benzamide	1-1-92;
(39)	98-16-8	Benzenamine, 3-(trifluoromethyl)-	7-1-90;
(40)	94-59-7	Benzene,1,2-methylenedioxy-4-allyl-	1-1-92;
(41)	541-73-1	Benzene, 1,3-dichloro-	1-1-92;
(42)	100-14-1	Benzene, 1-(chloromethyl)-4-nitro	7-1-90;
(43)	121-14-2	Benzene, 1-methyl-2,4-dinitro-	1-1-92;
(44)	606-20-2	Benzene, 1-methyl-2,6-dinitro-	1-1-92;
(45)	98-82-8	Benzene, 1-methylethyl-	1-1-92;
(46)	110-82-7	Benzene, hexahydro-	1-1-92;
(47)	108-38-3	Benzene, m-dimethyl-	1-1-92;
(48)	95-47-6	Benzene, o-dimethyl-	1-1-92;
(49)	106-42-3	Benzene, p-dimethyl-	1-1-92;
(50)	82-68-8	Benzene, pentachloronitro-	1-1-92;
(51)	98-05-5	Benzenearsonic acid	7-1-90;
(52)	85-44-9	1,2-Benzenedicarboxylic acid anhydride	1-1-92;
(53)	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	1-1-92;
(54)	3615-21-2	Benzimidazole, 4,5-dichloro-2 (trifluoromethyl)-	7-1-90;
(55)	81-07-2	1,2-Benzisothiazolin-3-one, 1,1-dioxide, and salts	1-1-92;
(56)	98-88-4	Benzoyl chloride	1-1-92;
(57)	94-36-0	Benzoyl peroxide	1-1-92;
(58)	100-44-7	Benzyl chloride	7-1-90;
(59)	140-29-4	Benzyl cyanide	7-1-90;
(60)	15271-41-7	Bicyclo[2.2.1]heptane-2-carbonitrile,5-chloro-6-(((methylamino) - carbonym)oxy)1m	7-1-90;
(61)	92-52-4	Biphenyl	1-1-92;
(62)	108-60-1	Bis(2-chloroisopropyl) ether	1-1-92;
(63)	103-23-1	Bis(2-ethylhexyl) adipate	1-1-92;
(64)	534-07-6	Bis(chloromethyl) ketone	7-1-90;
(65)	4044-65-9	Bitoscanate	7-1-90;
(66)	10294-34-5	Boron trichloride	7-1-90;
(67)	7637-07-2	Boron trifluoride	7-1-90;
(68)	353-42-4	Boron trifluoride compound with methyl ether (1:1)	7-1-90;
(69)	28772-56-7	Bromadiolone	7-1-90;
(70)	7726-95-6	Bromine	7-1-90;
(71)	75-25-2	Bromoform	1-1-92;
(72)	141-32-2	Butyl acrylate	1-1-92;
(73)	71-36-3	n-Butyl alcohol	1-1-92;
(74)	75-65-0	tert-Butyl alcohol	1-1-92;
(75)	78-92-2	sec-Butyl alcohol	1-1-92;
(76)	85-68-7	Butyl benzyl phthalate	1-1-92;
(77)	106-88-7	1,2-Butylene oxide	1-1-92;
(78)	123-72-8	Butyraldehyde	1-1-92;
(79)	2650-18-2	C.I. Acid Blue 9, diammonium salt	1-1-92;
(80)	3844-45-9	C.I. Acid Blue 9, disodium salt	1-1-92;
(81)	4680-78-8	C.I. Acid Green	1-1-92;
(82)	569-64-2	C.I. Basic Green 4	1-1-92;
(83)	989-38-8	C.I. Basic Red 1	1-1-92;

	CAS Number	Substance	Compliance Date
(84)	2832-40-8	C.I. Disperse Yellow 3	1-1-92;
(85)	81-88-9	C.I. Food Red 15	1-1-92;
(86)	3118-97-6	C.I. Solvent Orange 7	1-1-92;
(87)	842-07-9	C.I. Solvent Yellow 14	1-1-92;
(88)	128-66-5	C.I. Vat Yellow 4	1-1-92;
(89)	7778-44-1	Calcium arsenate	7-1-90;
(90)	156-62-7	Calcium cyanamide	1-1-92;
(91)	56-25-7	Cantharidin	7-1-90;
(92)	133-06-2	Captan	1-1-92;
(93)	51-83-2	Carbachol chloride	7-1-90;
(94)	26419-73-8	Carbamic acid, methyl-,O-(((2,4- dimethyl- 1,3-dithiolan-2-yl) methylene) amino)	7-1-90;
(95)	62-56-6	Carbamide, thio-	1-1-92;
(96)	63-25-2	Carbaryl	1-1-92;
(97)	1563-66-2	Carbofuran	7-1-90;
(98)	75-15-0	Carbon disulfide	7-1-90;
(99)	463-58-1	Carbonyl sulfide	1-1-92;
(100)	786-19-6	Carbophenothion	7-1-90;
(101)	120-80-9	Catechol	1-1-92;
(102)	133-90-4	Chloramben	1-1-92;
(103)	57-74-9	Chlordane	7-1-90;
(104)	470-90-6	Chlorfenvinfos	7-1-90;
(105)	76-13-1	Chlorinated fluorocarbon (Freon 113)	1-1-92;
(106)	--	Chlorinated phenols	1-1-92;
(107)	7782-50-5	Chlorine	7-1-90;
(108)	10049-04-4	Chlorine dioxide	1-1-92;
(109)	24934-91-6	Chlormephos	7-1-90;
(110)	999-81-5	Chlormequat chloride	7-1-90;
(111)	107-20-0	Chloroacetaldehyde	7-1-90;
(112)	79-11-8	Chloroacetic acid	7-1-90;
(113)	532-27-4	Chloroacetophenone	1-1-92;
(114)	108-90-7	Chlorobenzene	1-1-92;
(115)	75-00-3	Chloroethane	1-1-92;
(116)	107-07-3	Chloroethanol	7-1-90;
(117)	627-11-2	Chloroethyl chloroformate	7-1-90;
(118)	3691-35-8	Chlorophacinone	7-1-90;
(119)	126-99-8	Chloroprene	1-1-92;
(120)	1897-45-6	Chlorothalonil	1-1-92;
(121)	1982-47-4	Chloroxuron	7-1-90;
(122)	21923-23-9	Chlorthiophos	7-1-90;
(123)	10025-73-7	Chromic chloride	7-1-90;
(124)	--	Chromium Ill compounds and sodium dichromate	1-1-92;
(125)	--	Cobalt Compounds	1-1-92;
(126)	10210-68-1	Cobalt carbonyl	7-1-90;
(127)	62207-76-5	Cobalt, ((2,2'-(1,2-ethanediylbis (nitrilomethylidyne))bis(6-fluoro-phenolatol)) (2)	7-1-90;
(128)	64-86-8	Colchicine	7-1-90;
(129)	--	Copper and compounds	1-1-92;
(130)	56-72-4	Coumaphos	7-1-90;
(131)	5836-29-3	Coumatetralyl	7-1-90;
(132)	106-44-5	p-Cresol	1-1-92;
(133)	108-39-4	m-Cresol	1-1-92;
(134)	1319-77-3	Cresol(s)	1-1-92;
(135)	95-48-7	Cresylic acid	7-1-90;

	CAS Number	Substance	Compliance Date
(136)	535-89-7	Crimidine	7-1-90;
(137)	4170-30-3	Crotonaldehyde	7-1-90;
(138)	--	Cyanide and compounds	1-1-92;
(139)	57-12-5	Cyanides (soluble cyanide salts)	1-1-92;
(140)	506-68-3	Cyanogen bromide	7-1-90;
(141)	506-78-5	Cyanogen iodide	7-1-90;
(142)	2636-26-2	Cyanophos	7-1-90;
(143)	675-14-9	Cyanuric fluoride	7-1-90;
(144)	66-81-9	Cycloheximide	7-1-90;
(145)	108-91-8	Cyclohexylamine	7-1-90;
(146)	94-75-7	2,4-D Acid	1-1-92;
(147)	17702-41-9	Decaborane (14)	7-1-90;
(148)	1163-19-5	Decabromodipbenyl oxide	1-1-92;
(149)	8065-48-3	Demeton	7-1-90;
(150)	919-86-8	Demeton-S-methyl	7-1-90;
(151)	621-64-7	Di-n-propylnitrosamine	1-1-92;
(152)	10311-84-9	Dialifos	7-1-90;
(153)	2303-16-4	Diallate	1-1-92;
(154)	25376-45-8	Diaminotoluene	1-1-92;
(155)	334-88-3	Diazomethane	1-1-92;
(156)	19287-45-7	Diborane	7-1-90;
(157)	84-74-2	Dibutyl phthalate	7-1-90;
(158)	95-50-1	o-Dichlorobenzene	1-1-92;
(159)	25321-22-6	Dichlorobenzene (mixed)	1-1-92;
(160)	75-27-4	Dichlorobromomethane	1-1-92;
(161)	111-44-4	Dichloroethyl ether	7-1-90;
(162)	75-35-4	1,1-Dichloroethylene	1-1-92;
(163)	540-59-0	1,2-Dichloroethylene	1-1-92;
(164)	149-74-6	Dichloromethylphenylsilane	7-1-90;
(165)	120-83-2	2,4-Dichlorophenol	1-1-92;
(166)	78-87-5	1,2-Dichloropropane	1-1-92;
(167)	62-73-7	Dichlorvos	7-1-90;
(168)	141-66-2	Dicrotophos	7-1-90;
(169)	111-42-2	Diethanolamine	1-1-92;
(170)	814-49-3	Diethyl chlorophosphate	7-1-90;
(171)	1642-54-2	Diethylcarbamazine citrate	7-1-90;
(172)	123-91-1	1,4-Diethylene dioxide	1-1-92;
(173)	71-63-6	Digitoxin	7-1-90;
(174)	2238-07-5	Diglycidyl ether	7-1-90;
(175)	20830-75-5	Digoxin	7-1-90;
(176)	115-26-4	Dimefox	7-1-90;
(177)	60-51-5	Dimethoate	7-1-90;
(178)	121-69-7	Dimethyl aniline	1-1-92;
(179)	2524-03-0	Dimethyl phosphorochlorido-thioate	7-1-90;
(180)	131-11-3	Dimethyl phthalate	7-1-90;
(181)	75-18-3	Dimethyl sulfide	7-1-90;
(182)	99-98-9	Dimethyl-p-phenylenediamine	7-1-90;
(183)	80-15-9	alpha,alpha-Dimethyl-benzylhydroperoxide	1-1-92;
(184)	75-78-5	Dimethyldichlorosilane	7-1-90;
(185)	105-67-9	2,4-Dimethylphenol	1-1-92;
(186)	644-64-4	Dimetilan	7-1-90;
(187)	534-52-1	4,6-Dinitro-o-cresol	7-1-90;
(188)	51-28-5	2,4-Dinitrophenol	1-1-92;
(189)	88-85-7	Dinoseb	7-1-90;

	CAS Number	Substance	Compliance Date
(190)	1420-07-1	Dinoterb	7-1-90;
(191)	117-84-0	Dioctyl phthalate	7-1-90;
(192)	78-34-2	Dioxathion	7-1-90;
(193)	82-66-6	Diphacinone	7-1-90;
(194)	152-16-9	Diphosphoramide, octamethyl-	7-1-90;
(195)	298-04-4	Disulfoton	7-1-90;
(196)	514-73-8	Dithiazanine iodide	7-1-90;
(197)	541-53-7	Dithiobiuret	7-1-90;
(198)	2104-64-5	EPN	7-1-90;
(199)	316-42-7	Emetine, dihydrochloride	7-1-90;
(200)	115-29-7	Endosulfan	7-1-90;
(201)	2778-04-3	Endothion	7-1-90;
(202)	72-20-8	Endrin	7-1-90;
(203)	50-14-6	Ergocalciferol	7-1-90;
(204)	379-79-3	Ergotamine tartrate	7-1-90;
(205)	67-72-1	Ethane, 1,1,1,2,2,2-hexachloro-	1-1-92;
(206)	72-43-5	Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)-	1-1-92;
(207)	79-34-5	Ethane, 1,1,2,2-tetrachloro-	1-1-92;
(208)	79-00-5	Ethane, 1,1,2-trichloro-	1-1-92;
(209)	1622-32-8	Ethanesulfonyl chloride, 2-chloro-	7-1-90;
(210)	10140-87-1	Ethanol, 1,2-dichloro-, acetate	7-1-90;
(211)	4549-40-0	Ethenamine, N-methyl-N- nitroso-	1-1-92;
(212)	563-12-2	Ethion	7-1-90;
(213)	13194-48-4	Ethoprophos	7-1-90;
(214)	110-80-5	2-Ethoxyethanol	1-1-92;
(215)	510-15-6	Ethyl 4,4'-dichlorobenzilate	1-1-92;
(216)	100-41-4	Ethyl benzene	1-1-92;
(217)	541-41-3	Ethyl chloroformate	1-1-92;
(218)	542-90-5	Ethyl thiocyanate	7-1-90;
(219)	538-07-8	Ethyl bis(2-chloroethyl)amine	7-1-90;
(220)	371-62-0	Ethylene fluorohydrin	7-1-90;
(221)	107-21-1	Ethylene glycol	1-1-92;
(222)	107-15-3	Ethylenediamine	7-1-90;
(223)	151-56-4	Ethyleneimine	7-1-90;
(224)	22224-92-6	Fenamiphos	7-1-90;
(225)	122-14-5	Fenitrothion	7-1-90;
(226)	115-90-2	Fensulfothion	7-1-90;
(227)	4301-50-2	Fluenetil	7-1-90;
(228)	2164-17-2	Fluometuron	1-1-92;
(229)	7782-41-4	Fluorine	7-1-90;
(230)	640-19-7	Fluoroacetamide	7-1-90;
(231)	144-49-0	Fluoroacetic acid	7-1-90;
(232)	359-06-8	Fluoroacetyl chloride	7-1-90;
(233)	51-21-8	Fluorouracil	7-1-90;
(234)	944-22-9	Fonofos	7-1-90;
(235)	107-16-4	Formaldehvde cyanohydrin	7-1-90;
(236)	23422-53-9	Formetanate	7-1-90;
(237)	2540-82-1	Formothion	7-1-90;
(238)	17702-57-7	Formparanate	7-1-90;
(239)	21548-32-3	Fosthietan	7-1-90;
(240)	3878-19-1	Fuberidazole	7-1-90;
(241)	107-44-8	GB (Sarin)	7-1-90;
(242)	13450-90-3	Gallium trichloride	7-1-90;

	CAS Number	Substance	Compliance Date
(243)	--	Glycol ethers	1-1-92;
(244)	76-44-8	Heptachlor	1-1-92;
(245)	87-68-3	Hexachlorobutadiene	1-1-92;
(246)	77-47-4	Hexachlorocyclopentadiene	7-1-90;
(247)	1335-87-1	Hexachloronaphthalene	7-1-90;
(248)	4835-11-4	Hexamethylenediamine, N,N'-di- butyl-	7-1-90;
(249)	74-90-8	Hydrocyanic acid	7-1-90;
(250)	7647-01-0	Hydrogen chloride	7-1-90;
(251)	7664-39-3	Hydrogen fluoride	7-1-90;
(252)	7722-84-1	Hydrogen peroxide	7-1-90;
(253)	7783-07-5	Hydrogen selenide	7-1-90;
(254)	7783-06-4	Hydrogen sulfide	7-1-90;
(255)	123-31-9	Hydroquinone	7-1-90;
(256)	13463-40-6	Iron, pentacarbonyl-	7-1-90;
(257)	297-78-9	Isobenzan	7-1-90;
(258)	78-84-2	Isobutyraldehyde	1-1-92;
(259)	78-82-0	Isobutyronitrile	7-1-90;
(260)	102-36-3	Isocyanic acid, 3,4-dichloro- phenyl ester	7-1-90;
(261)	465-73-6	Isodrin	7-1-90;
(262)	55-91-4	Isofluorphate	7-1-90;
(263)	4098-71-9	Isophorone diisocyanate	7-1-90;
(264)	67-63-0	Isopropyl alcohol	1-1-92;
(265)	108-23-6	Isopropyl chloroformate	7-1-90;
(266)	625-55-8	Isopropyl formate	7-1-90;
(267)	80-05-7	4,4'-Isopropylidenediphenol	1-1-92;
(268)	119-38-0	Isopropylmethylpyrazolyl di-methylcarbamate	7-1-90;
(269)	115-32-2	Kelthane	1-1-92;
(270)	78-97-7	Lactonitrile	7-1-90;
(271)	21609-90-5	Leptophos	7-1-90;
(272)	541-25-3	Lewisite	7-1-90;
(273)	7580-67-8	Lithium hydride	7-1-90;
(274)	108-31-6	Maleic anhydride	1-1-92;
(275)	109-77-3	Malononitrile	7-1-90;
(276)	12427-38-2	Maneb	1-1-92;
(277)	7439-96-5	Manganese and compounds	1-1-92;
(278)	12108-13-3	Manganese, tricarbonyl methyl- cyclopentadienyl	7-1-90;
(279)	108-78-1	Melamine	1-1-92;
(280)	950-10-7	Mephosfolan	7-1-90;
(281)	1600-27-7	Mercuric acetate	7-1-90;
(282)	7487-94-7	Mercuric chloride	7-1-90;
(283)	21908-53-2	Mercuric oxide	7-1-90;
(284)	--	Mercury and its soluble compounds	1-1-92;
(285)	10476-95-6	Methacrolein diacetate	7-1-90;
(286)	760-93-0	Methacrylic anhydride	7-1-90;
(287)	126-98-7	Methacrylonitrile	7-1-90;
(288)	920-46-7	Methacryloyl chloride	7-1-90;
(289)	30674-80-7	Methacryloyloxyethyl isocyanate	7-1-90;
(290)	10265-92-6	Methamidophos	7-1-90;
(291)	74-95-3	Methane, dibromo-	1-1-92;
(292)	74-88-4	Methane, iodo-	1-1-92;
(293)	558-25-8	Methanesulfonyl fluoride	7-1-90;
(294)	67-56-1	Methanol	1-1-92;
(295)	950-37-8	Methidathion	7-1-90;
(296)	2032-65-7	Methiocarb	7-1-90;

	CAS Number	Substance	Compliance Date
(297)	16752-77-5	Methomyl	7-1-90;
(298)	109-86-4	2-Methoxyethanol	1-1-92;
(299)	151-38-2	Methoxyethylmercuric acetate	7-1-90;
(300)	80-63-7	Methyl 2-chloroacrylate	7-1-90;
(301)	96-33-3	Methyl acrylate	1-1-92;
(302)	74-83-9	Methyl bromide	7-1-90;
(303)	74-87-3	Methyl chloride	1-1-92;
(304)	71-55-6	Methyl chloroform	1-1-92;
(305)	79-22-1	Methyl chloroformate	7-1-90;
(306)	624-92-0	Methyl disulfide	7-1-90;
(307)	78-93-3	Methyl ethyl ketone	1-1-92;
(308)	108-10-1	Methyl isobutyl ketone	1-1-92;
(309)	624-83-9	Methyl isocyanate	7-1-90;
(310)	556-61-6	Methyl isothiocyanate	7-1-90;
(311)	74-93-1	Methyl mercaptan	7-1-90;
(312)	80-62-6	Methyl methacrylate	1-1-92;
(313)	3735-23-7	Methyl phenkapton	7-1-90;
(314)	676-97-1	Methyl phosphonic dichloride	7-1-90;
(315)	1634-04-4	Methyl tert-butyl ether	1-1-92;
(316)	556-64-9	Methyl thiocyanate	7-1-90;
(317)	78-94-4	Methyl vinyl ketone	7-1-90;
(318)	101-68-8	Methylenebis(phenylisocyanate (MBI)	1-1-92;
(319)	502-39-6	Methylmercuric dicyanamide	7-1-90;
(320)	75-79-6	Methyltrichlorosilane	7-1-90;
(321)	1129-41-5	Metolcarb	7-1-90;
(322)	7786-34-7	Mevinphos	7-1-90;
(323)	315-18-4	Mexacarbate	7-1-90;
(324)	50-07-7	Mitomycin C	7-1-90;
(325)	1313-27-5	Molybdenum trioxide	1-1-92;
(326)	6923-22-4	Monocrotophos	7-1-90;
(327)	60-34-4	Monomethyl hydrazine	7-1-90;
(328)	2763-96-4	Muscimol	7-1-90;
(329)	91-20-3	Naphthalene	1-1-92;
(330)	134-32-7	1-Naphthylamine	1-1-92;
(331)	54-11-5	Nicotine	7-1-90;
(332)	65-30-5	Nicotine sulfate	7-1-90;
(333)	7697-37-2	Nitric acid	7-1-90;
(334)	98-95-3	Nitrobenzene	7-1-90;
(335)	92-93-3	4-Nitrobiphenyl	1-1-92;
(336)	1122-60-7	Nitrocyclohexane	7-1-90;
(337)	55-63-0	Nitroglycerin	1-1-92;
(338)	88-75-5	o-Nitrophenol	1-1-92;
(339)	100-02-7	p-Nitrophenol	1-1-92;
(340)	86-30-6	N-Nitrosodiphenylamine	1-1-92;
(341)	991-42-4	Norbormide	7-1-90;
(342)	2234-13-1	Octachloronaphthalene	1-1-92;
(343)	--	Organorhodium Complex	7-1-90;
(344)	20816-12-0	Osmium tetroxide	7-1-90;
(345)	630-60-4	Ouabain	7-1-90;
(346)	23135-22-0	Oxamyl	7-1-90;
(347)	78-71-7	Oxetane, 3,3-bis(chloromethyl)-	7-1-90;
(348)	2497-07-6	Oxydisulfoton	7-1-90;
(349)	1910-42-5	Paraquat	7-1-90;
(350)	2074-50-2	Paraquat methosulfate	7-1-90;

	CAS Number	Substance	Compliance Date
(351)	56-38-2	Parathion	7-1-90;
(352)	298-00-0	Parathion-methyl	7-1-90;
(353)	12002-03-8	Paris green	7-1-90;
(354)	19624-22-7	Pentaborane	7-1-90;
(355)	87-86-5	Pentachlorophenol	7-1-90;
(356)	2570-26-5	Pentadecylamine	7-1-90;
(357)	79-21-0	Peracetic acid	7-1-90;
(358)	127-18-4	Perchloroethylene	1-1-92;
(359)	594-42-3	Perchloromethylmercaptan	7-1-90;
(360)	108-95-2	Phenol	7-1-90;
(361)	97-18-7	Phenol, 2,2'-thiobis(4,6-dichloro-	7-1-90;
(362)	4418-66-0	Phenol, 2,2'-thiobis(4-chloro-6- methyl-(9ci))	7-1-90;
(363)	95-95-4	Phenol, 2,4,5-trichloro-	1-1-92;
(364)	64-00-6	Phenol, 3-(1-methylethyl)- methylcarbamate	7-1-90;
(365)	58-36-6	Phenoxarsine, 10,10'-oxydi-	7-1-90;
(366)	696-28-6	Phenyl dichloroarsine	7-1-90;
(367)	106-50-3	p-Phenylenediamine	1-1-92;
(368)	59-88-1	Phenylhydrazine hydrochloride	7-1-90;
(369)	62-38-4	Phenylmercury acetate	7-1-90;
(370)	90-43-7	2-Phenylphenol	1-1-92;
(371)	2097-19-0	Phenylsilatrane	7-1-90;
(372)	103-85-5	Phenylthiourea	7-1-90;
(373)	298-02-2	Phorate	7-1-90;
(374)	4104-14-7	Phosacetim	7-1-90;
(375)	947-02-4	Phosfolan	7-1-90;
(376)	75-44-5	Phosgene	7-1-90;
(377)	732-11-6	Phosmet	7-1-90;
(378)	13171-21-6	Phosphamidon	7-1-90;
(379)	7803-51-2	Phosphine	7-1-90;
(380)	2703-13-1	Phosphonothioic acid, methyl-,O-ethyl O-(4-(methylthio) phenyl) ester	7-1-90;
(381)	50782-69-9	Phosphonothioic acid, methyl-, S-(2-(bis(1-methylethyl)amino) ethyl) o-ethyl ester	7-1-90;
(382)	2665-30-7	Phosphonothioic acid, methyl-, O-(4-nitrophenyl) O-phenyl ester	7-1-90;
(383)	7664-38-2	Phosphoric acid	1-1-92;
(384)	3254-63-5	Phosphoric acid, dimethyl 4-(methylthio) phenyl ester	7-1-90;
(385)	2587-90-8	Phosphorothioic acid, O,O- dimethyl-	7-1-90;
(386)	7723-14-0	Phosphorous (yellow)	7-1-90;
(387)	7719-12-2	Phosphorous trichloride	7-1-90;
(388)	10025-87-3	Phosphorus oxychloride	7-1-90;
(389)	10026-13-8	Phosphorus pentacbloride	7-1-90;
(390)	1314-56-3	Phosphorus pentoxide	7-1-90;
(391)	57-47-6	Physostigmine	7-1-90;
(392)	57-64-7	Physostigmine, salicylate (1:1)	7-1-90;
(393)	88-89-1	Picric acid	1-1-92;
(394)	124-87-8	Picrotoxin	7-1-90;
(395)	110-89-4	Piperidine	7-1-90;
(396)	5281-13-0	Piprotal	7-1-90;
(397)	23505-41-1	Pirimifos-ethyl	7-1-90;
(398)	10025-65-7	Platinous chloride	7-1-90;
(399)	13454-96-1	Platinum tetrachloride	7-1-90;
(400)	10124-50-2	Potassium arsenite	7-1-90;
(401)	151-50-8	Potassium cyanide	7-1-90;
(402)	506-61-6	Potassium silver cyanide	7-1-90;
(403)	2631-37-0	Promecarb	7-1-90;

	CAS Number	Substance	Compliance Date
(404)	106-96-7	Propargyl bromide	7-1-90;
(405)	57-57-8	Propiolactone, beta-	7-1-90;
(406)	123-38-6	Propionaldehyde	1-1-92;
(407)	107-12-0	Propionitrile	7-1-90;
(408)	542-76-7	Propionitrile, 3-chloro-	7-1-90;
(409)	70-69-9	Propiophenone, 4'-amino-	7-1-90;
(410)	114-26-1	Propoxur	1-1-92;
(411)	109-61-5	Propyl chloroformate	7-1-90;
(412)	2275-18-5	Prothoate	7-1-90;
(413)	129-00-0	Pyrene	7-1-90;
(414)	110-86-1	Pyridine	1-1-92;
(415)	140-76-1	Pyridine, 2-methyl-5-vinyl-	7-1-90;
(416)	504-24-5	Pyridine, 4-amino-	7-1-90;
(417)	1124-33-0	Pyridine, 4-nitro-, 1-oxide	7-1-90;
(418)	53558-25-1	Pyriminil	7-1-90;
(419)	91-22-5	Quinoline	1-1-92;
(420)	106-51-4	Quinone	1-1-92;
(421)	10049-07-7	Rhodium trichloride	7-1-90;
(422)	14167-18-1	Salcomine	7-1-90;
(423)	--	Selenium and compounds	1-1-92;
(424)	7791-23-3	Selenium oxychloride	7-1-90;
(425)	7783-00-8	Selenous acid	7-1-90;
(426)	563-41-7	Semicarbazide hydrochloride	7-1-90;
(427)	3037-72-7	Silane, (4-aminobutyl) diethoxy- methyl-	7-1-90;
(428)	--	Silver and compounds	1-1-92;
(429)	7631-89-2	Sodium arsenate	7-1-90;
(430)	7784-46-5	Sodium arsenite	7-1-90;
(431)	26628-22-8	Sodium azide (Na(N3))	7-1-90;
(432)	124-65-2	Sodium cacodylate	7-1-90;
(433)	143-33-9	Sodium cyanide (Na(CN))	7-1-90;
(434)	62-74-8	Sodium fluoroacetate	7-1-90;
(435)	1310-73-2	Sodium hydroxide	1-1-92;
(436)	131-52-2	Sodium pentachlorophenate	7-1-90;
(437)	13410-01-0	Sodium selenate	7-1-90;
(438)	10102-18-8	Sodium selenite	7-1-90;
(439)	7757-82-6	Sodium sulfate (solution)	1-1-92;
(440)	10102-20-2	Sodium tellurite	7-1-90;
(441)	900-95-8	Stannane, acetoxytriphenyl-	7-1-90;
(442)	57-24-9	Strychnine	7-1-90;
(443)	60-41-3	Strychnine, sulfate	7-1-90;
(444)	100-42-5	Styrene	1-1-92;
(445)	3689-24-5	Sulfotep	7-1-90;
(446)	3569-57-1	Sulfoxide, 3-chloropropyl octyl	7-1-90;
(447)	7783-60-0	Sulfur tetrafluoride	7-1-90;
(448)	7446-11-9	Sulfur trioxide	7-1-90;
(449)	7664-93-9	Sulfuric acid	7-1-90;
(450)	77-81-6	Tabun	7-1-90;
(451)	13494-80-9	Tellurium	7-1-90;
(452)	7783-80-4	Tellurium hexafluoride	7-1-90;
(453)	107-49-3	Tepp	7-1-90;
(454)	13071-79-9	Terbufos	7-1-90;
(455)	100-21-0	Terephthalic acid	1-1-92;
(456)	961-11-5	Tetrachlorvinphos	1-1-92;
(457)	78-00-2	Tetraethyl lead	7-1-90;

	CAS Number	Substance	Compliance Date
(458)	597-64-8	Tetraethyltin	7-1-90;
(459)	75-74-1	Tetramethyl lead	7-1-90;
(460)	509-14-8	Tetranitromethane	7-1-90;
(461)	--	Thallium and compounds	1-1-92;
(462)	10031-59-1	Thallium sulfate	7-1-90;
(463)	6533-73-9	Thallous carbonate	7-1-90;
(464)	7791-12-0	Thallous chloride	7-1-90;
(465)	2757-18-8	Thallous malonate	7-1-90;
(466)	7446-18-6	Thallous sulfate	7-1-90;
(467)	2231-57-4	Thiocarbazide	7-1-90;
(468)	39196-18-4	Thiofanox	7-1-90;
(469)	297-97-2	Thionazin	7-1-90;
(470)	108-98-5	Thiophenol	7-1-90;
(471)	79-19-6	Thiosemicarbazide	7-1-90;
(472)	5344-82-1	Thiourea, (2-chlorophenyl)-	7-1-90;
(473)	614-78-8	Thiourea, (2-methylphenyl)-	7-1-90;
(474)	108-88-3	Toluene	1-1-92;
(475)	91-08-7	Toluene 2,6-diisocyanate	7-1-90;
(476)	110-57-6	Trans-1,4-dichlorobutene	7-1-90;
(477)	1031-47-6	Triamiphos	7-1-90;
(478)	24017-47-8	Triazofos	7-1-90;
(479)	1558-25-4	Trichloro(chloromethyl)silane	7-1-90;
(480)	27137-85-5	Tricbloro(dichlorophenyl)silane	7-1-90;
(481)	76-02-8	Trichloroacetyl chloride	7-1-90;
(482)	120-82-1	1,2,4-Trichlorobenzene	1-1-92;
(483)	79-01-6	Trichloroethylene	1-1-92;
(484)	115-21-9	Trichloroethylsilane	7-1-90;
(485)	327-98-0	Trichloronate	7-1-90;
(486)	98-13-5	Trichlorophenylsilane	7-1-90;
(487)	52-68-6	Trichlorophon	7-1-90;
(488)	998-30-1	Triethoxysilane	7-1-90;
(489)	1582-09-8	Trifluralin	1-1-92;
(490)	75-77-4	Trimethylchlorosilane	7-1-90;
(491)	824-11-3	Trimethylolpropane pbosphite	7-1-90;
(492)	1066-45-1	Trimethyltin chloride	7-1-90;
(493)	639-58-7	Triphenyltin chloride	7-1-90;
(494)	555-77-1	Tris (2-chloroethyl)amine	7-1-90;
(495)	50782-69-9	VX (Ethyl S-dimethylamino- ethylmethyl phospbonothiolate)	7-1-90;
(496)	2001-95-8	Valinomycin	7-1-90;
(497)	1314-62-1	Vanadium pentoxide	7-1-90;
(498)	108-05-4	Vinyl acetate monomer	7-1-90;
(499)	81-81-2	Warfarin	7-1-90;
(500)	129-06-6	Warfarin sodium	7-1-90;
(501)	1330-20-7	Xylene	1-1-92;
(502)	87-62-7	2,6-Xylidine	1-1-92;
(503)	28347-13-9	Xylylene dichloride	7-1-90;
(504)	--	Zinc and compounds	1-1-92;
(505)	1314-84-7	Zinc phosphide	7-1-90;
(506)	58270-08-9	Zinc, dichloro(4,4-dimethyl-5((((methylamino) carbonyl)oxy) imino) pentanenitrile)	7-1-90;
(507)	12122-67-7	Zineb	1-1-92.

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APPENDIX E

HAZARDOUS AIR POLLUTANTS

CAS Number	Pollutant
75-07-0	Acetaldehyde
60-35-5	Acetamide
75-05-8	Acetonitrile
98-86-2	Acetophenone
53-96-3	2-Acetylaminofluorene
107-02-8	Acrolein
79-06-1	Acrylamide
79-10-7	Acrylic acid
107-13-1	Acrylonitrile
107-05-1	Allyl chloride
92-67-1	4-Aminobiphenyl
62-53-3	Aniline
90-04-0	o-Anisidine
1332-21-4	Asbestos
71-43-2	Benzene (including benzene from gasoline)
92-87-5	Benzidine
98-07-7	Benzotrichloride
100-44-7	Benzyl chloride
92-52-4	Biphenyl
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)
542-88-1	Bis(chloromethyl) ether
75-25-2	Bromoform
106-99-0	1,3-Butadiene
156-62-7	Calcium cyanamide
105-60-2	Caprolactam (Removed 6/18/96, 61FR30816)
133-06-2	Captan
63-25-2	Carbaryl
75-15-0	Carbon disulfide
56-23-5	Carbon tetrachloride
463-58-1	Carbonyl sulfide
120-80-9	Catechol
133-90-4	Chloramben
57-74-9	Chlordane
7782-50-5	Chlorine
79-11-8	Chloroacetic acid
532-27-4	2-Chloroacetophenone
108-90-7	Chlorobenzene
510-15-6	Chlorobenzilate
67-66-3	Chloroform
107-30-2	Chloromethyl methyl ether
126-99-8	Chloroprene
1319-77-3	Cresol/Cresylic acid (mixed isomers)
95-48-7	o-Cresol
108-39-4	m-Cresol
106-44-5	p-Cresol
98-82-8	Cumene
N/A	2,4-D (2,4-Dichlorophenoxyacetic Acid) (including salts and esters)
72-55-9	DDE (1,1-dichloro-2,2-bis(p-chlorophenyl) ethylene)
334-88-3	Diazomethane

CAS Number	Pollutant
132-64-9	Dibenzofuran
96-12-8	1,2-Dibromo-3-chloropropane
84-74-2	Dibutyl phthalate
106-46-7	1,4-Dichlorobenzene
91-94-1	3,3'-Dichlorobenzidine
111-44-4	Dichloroethyl ether (Bis[2-chloroethyl]ether)
542-75-6	1,3-Dichloropropene
62-73-7	Dichlorvos
111-42-2	Diethanolamine
64-67-5	Diethyl sulfate
119-90-4	3,3'-Dimethoxybenzidine
60-11-7	4-Dimethylaminoazobenzene
121-69-7	N,N-Dimethylaniline
119-93-7	3,3'-Dimethylbenzidine
79-44-7	Dimethylcarbamoyl chloride
68-12-2	N,N-Dimethylformamide
57-14-7	1,1-Dimethylhydrazine
131-11-3	Dimethyl phthalate
77-78-1	Dimethyl sulfate
N/A	4,6-Dinitro-o-cresol (including salts)
51-28-5	2,4-Dinitrophenol
121-14-2	2,4-Dinitrotoluene
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)
122-66-7	1,2-Diphenylhydrazine
106-89-8	Epichlorohydrin (l-Chloro-2,3-epoxypropane)
106-88-7	1,2-Epoxybutane
140-88-5	Ethyl acrylate
100-41-4	Ethylbenzene
51-79-6	Ethyl carbamate (Urethane)
75-00-3	Ethyl chloride (Chloroethane)
106-93-4	Ethylene dibromide (Dibromoethane)
107-06-2	Ethylene dichloride (1,2-Dichloroethane)
107-21-1	Ethylene glycol
151-56-4	Ethyleneimine (Aziridine)
75-21-8	Ethylene oxide
96-45-7	Ethylene thiourea
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)
50-00-0	Formaldehyde
76-44-8	Heptachlor
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
N/A	1,2,3,4,5,6-Hexachlorocyclohexane (all stereo isomers, including lindane)
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
822-06-0	Hexamethylene diisocyanate
680-31-9	Hexamethylphosphoramide
110-54-3	Hexane
302-01-2	Hydrazine
7647-01-0	Hydrochloric acid (Hydrogen Chloride)
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)
123-31-9	Hydroquinone
78-59-1	Isophorone
108-31-6	Maleic anhydride
67-56-1	Methanol
72-43-5	Methoxychlor

CAS Number	Pollutant
74-83-9	Methyl bromide (Bromomethane)
74-87-3	Methyl chloride (Chloromethane)
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)
78-93-3	Methyl ethyl ketone (2-Butanone)
60-34-4	Methylhydrazine
74-88-4	Methyl iodide (Iodomethane)
108-10-1	Methyl isobutyl ketone (Hexone)
624-83-9	Methyl isocyanate
80-62-6	Methyl methacrylate
1634-04-4	Methyl tert-butyl ether
101-14-4	4,4'-Methylenebis(2-chloroaniline)
75-09-2	Methylene chloride (Dichloromethane)
101-68-8	4,4'-Methylenediphenyl diisocyanate (MDI)
101-77-9	4,4'-Methylenedianiline
91-20-3	Naphthalene
98-95-3	Nitrobenzene
92-93-3	4-Nitrobiphenyl
100-02-7	4-Nitrophenol
79-46-9	2-Nitropropane
684-93-5	N-Nitroso-N-methylurea
62-75-9	N-Nitrosodimethylamine
59-89-2	N-Nitrosomorpholine
56-38-2	Parathion
82-68-8	Pentachloronitrobenzene (Quintobenzene)
87-86-5	Pentachlorophenol
108-95-2	Phenol
106-50-3	p-Phenylenediamine
75-44-5	Phosgene
7803-51-2	Phosphine
7723-14-0	Phosphorus
85-44-9	Phthalic anhydride
1336-36-3	Polychlorinated biphenyls (Aroclors)
1120-71-4	1,3-Propane sultone
57-57-8	beta-Propiolactone
123-38-6	Propionaldehyde
114-26-1	Propoxur (Baygon)
78-87-5	Propylene dichloride (1,2-Dichloropropane)
75-56-9	Propylene oxide
75-55-8	1,2-Propylenimine (2-Methylaziridine)
91-22-5	Quinoline
106-51-4	Quinone (p-Benzoquinone)
100-42-5	Styrene
96-09-3	Styrene oxide
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene (Perchloroethylene)
7550-45-0	Titanium tetrachloride
108-88-3	Toluene
95-80-7	Toluene-2,4-diamine
584-84-9	2,4-Toluene diisocyanate
95-53-4	o-Toluidine
8001-35-2	Toxaphene (chlorinated camphene)
120-82-1	1,2,4-Trichlorobenzene
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene

CAS Number	Pollutant
95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol
121-44-8	Triethylamine
1582-09-8	Trifluralin
540-84-1	2,2,4-Trimethylpentane
108-05-4	Vinyl acetate
593-60-2	Vinyl bromide
75-01-4	Vinyl chloride
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
1330-20-7	Xylenes (mixed isomers)
95-47-6	o-Xylene
108-38-3	m-Xylene
106-42-3	p-Xylene
	Antimony Compounds
	Arsenic Compounds (inorganic including arsine)
	Beryllium Compounds
	Cadmium Compounds
	Chromium Compounds
	Cobalt Compounds
	Coke Oven Emissions
	Cyanide Compounds
	Glycol ethers
	Lead Compounds
	Manganese Compounds
	Mercury Compounds
	Fine mineral fibers
	Nickel Compounds
	Polycyclic Organic Matter
	Radionuclides (including radon)
	Selenium Compounds

NOTE: For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

APPENDIX F

OZONE DEPLETING SUBSTANCES

Section I

Class I Ozone Depleting Substance (40 CFR 82.3, Appendix A to Subpart A)

A. Group I:
- CFCl(3) -- Trichlorofluoromethane (CFC-11)
- CF(2)Cl(2) -- Dichlorofifluoromethane (CFC-12)
- C(2)F(3)Cl(3) -- Trichlorotrifluoroethane (CFC-113)
- C(2)F(4)Cl(2) -- Dichlorotetrafluoroethane (CFC-114)
- C(2)F(5)Cl -- Monochloropentafluoroethane (CFC-115)
- All isomers of the above chemicals

B. Group II:
- CF(2)ClBr -- Bromochlorodifluoromethane (Halon-1211)
- CF(3)Br -- Bromotrifluoromethane (Halon-1301)
- C(2)F(4)Br(2) -- Dibromotetrafluoroethane (Halon-2402)
- All isomers of the above chemicals

C. Group III:
- CF(3)Cl -- Chlorotrifluoromethane (CFC-13)
- C(2)FCl(5) -- (CFC-111)
- C(2)F(2)Cl(4) -- (CFC-112)
- C(3)Fcl(7) -- (CFC-211)
- C(3)F(2)Cl(6) -- (CFC-212)
- C(3)F(3)Cl(5) -- (CFC-213)
- C(3)F(4)Cl(4) -- (CFC-214)
- C(3)F(5)Cl(3) -- (CFC-215)
- C(3)F(6)Cl(2) -- (CFC-216)
- C(3)F(7)Cl -- (CFC-217)
- All isomers of the above chemicals

D. Group IV:
- CCl(4) -- Carbon Tetrachloride

E. Group V:
- C(2)H(3)Cl(3) -- 1,1,1 Trichloroethane (Methyl chloroform)
- All isomers of the above chemical except 1,1,2-trichloroethane

F. Group VI:
- CH(3)Br -- Bromomethane (Methyl Bromide)

G. Group VII:
- CHFBR(2)
- CHF(2)Br (HBFC-2201)
- CH(2)FBr
- C(2)HFBr(4)
- C(2)HF(2)Br(3)
- C(2)HF(3)Br(2)
- C(2)HF(4)Br
- C(2)H(2)FBr(3)
- C(2)H(2)F2Br(2)
- C(2)H(2)F(3)Br
- C(2)H(2)FBr(2)
- C(2)H(3)F(2)Br

C(2)H(4)FBr
C(3)HFBr(6)
C(3)HF(2)Br(5)
C(3)HF(3)Br(4)
C(3)HF(4)Br(3)
C(3)HF(5)Br(2)
C(3)HF(6)Br
C(3)H(2)FBR(5)
C(3)H(2)F(2)BR(4)
C(3)H(2)F(3)Br(3)
C(3)H(2)F(4)Br(2)
C(3)H(2)F(5)BR
C(3)H(3)FBR(4)
C(3)H(3)F(2)Br(3)
C(3)H(3)F(3)Br(2)
C(3)H(3)F(4)Br
C(3)H(4)FBr(3)
C(3)H(4)F(2)Br(2)
C(3)H(4)F(3)Br
C(3)H(5)FBr(2)
C(3)H(5)F(2)Br
C(3)H(6)FB

Section II

Class II Ozone Depleting Substance (40 CFR 82.3, Appendix B to Subpart A)

CHFCl(2) -- Dichlorofluoromethane (HCFC-21)
CHF(2)Cl -- Chlorodifluoromethane (HCFC-22)
CH(2)FCl -- Chlorofluoromethane (HCFC-31)
C(2)HFCl(4) -- (HCFC-121)
C(2)HF(2)Cl(3) -- (HCFC-122)
C(2)HF(3)Cl(2) -- (HCFC-123)
C(2)HF(4)Cl -- (HCFC-124)
C(2)H(2)FCl(3) -- (HCFC-131)
C(2)H(2)F(2)Cl(2) -- (HCFC-132b)
C(2)H(2)F(3)Cl -- (HCFC-133a)
C(2)H(3)FCl(2) -- (HCFC-141b)
C(2)H(3)F(2)Cl -- (HCFC-142b)
C(3)HCFCl(6) -- (HCFC-221)
C(3)HF(2)Cl(5) -- (HCFC-222)
C(3)HF(3)Cl(4) -- (HCFC-223)
C(3)HF(4)Cl(3) -- (HCFC-224)
C(3)HF(5)Cl(2) -- (HCFC-225ca)
C(3)HF(5)Cl -- (HCFC-225cb)
C(3)HF(6)Cl -- (HCFC-226)
C(3)H(2)FCl(5) -- (HCFC-231)
C(3)H(2)F(2)Cl(4) -- (HCFC-232)
C(3)H(2)F(3)Cl(3) -- (HCFC-233)
C(3)H(2)F(4)Cl(2) -- (HCFC-234)
C(3)H(2)F(5)Cl -- (HCFC-235)
C(3)H(3)FCl(4) -- (HCFC-241)
C(3)H(3)F(2)Cl(3) -- (HCFC-242)

C(3)H(3)F(3)Cl(2) -- (HCFC-243)
C(3)H(3)F(4)Cl -- (HCFC-244)
C(3)H(4)FCl(3) -- (HCFC-251)
C(3)H(4)F(2)Cl(2) -- (HCFC-252)
C(3)H(4)F(3)Cl -- (HCFC-253)
C(3)H(5)FCl(2) -- (HCFC-261)
C(3)H(5)F2Cl -- (HCFC-262)
C(3)H(6)FCl -- (HCFC-271)
All isomers of the above chemicals

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APPENDIX G

TESTING FORMS AND PROTOCOLS FOR STAGE II VAPOR RECOVERY SYSTEMS

Section I

California Environmental Protection Agency Air Resources Board (CARB) Definitions

D-200

Definitions for Vapor Recovery Procedures

1 APPLICABILITY

The terms and acronyms contained herein are applicable for the *Certification and Test Procedures for Vapor Recovery Systems at Gasoline Dispensing Facilities, Gasoline Bulk Plants, Gasoline Terminals, Cargo Tanks, and Novel Facilities*. They are intended as a clarification of the terms and acronyms used throughout the Certification and Test Procedures.

2 TERMS

airport refueller
a cargo tank which: has a total capacity no greater than 5000 gallons; exclusively transports avgas and jet fuel; and is not licensed for public highway use.

assist
a vapor recovery system, which employs a pump, blower, or other vacuum inducing devices, to collect and/or process vapors at a subject facility.

balance
a vapor recovery system which uses direct displacement to collect and/or process vapors at a subject facility.

blend valve
the valve in a dispenser that typically creates specific product grade by blending two other product grades in a ratio.

bootless nozzle
identifies a type of vapor recovery nozzle that does not have a bellows, or "boot," over the length of the nozzle spout.

bulk plant
an intermediate gasoline distribution facility where delivery to and from storage tanks is by cargo tank.

cargo tank
any container, including associated pipes and fittings, that is used for the transportation of gasoline on any highway and is required to be certified in accordance with Section 41962 of the California Health and Safety Code.

certification procedures

document certified performance standards and performance specifications for vapor recovery systems, and document test procedures for determining compliance with such standards and specifications.

The purpose of such procedures is to provide certified performance standards and performance specifications for performance levels equal to or greater than those levels required by federal, state, and local statutes, rules, and regulations applicable at the time that any ARB Executive Order certifying a system is signed.

certification tests

tests which, as required by a certification procedure or an ARB Executive Order:

are performed before certification to determine compliance with a certified performance standard and

are performed after certification to determine compliance with a certified performance standard.

Note: Some ARB Executive Orders require periodic certification testing after certification. Also, compare with "compliance tests" below.

compartment

a liquid-tight division of a cargo tank.

compliance tests

tests which, as required by a certification procedure or an ARB Executive Order:

are performed before certification to evaluate and determine a certified performance specification and

are performed after certification to determine compliance with a certified performance specification.

district

any of California's local air pollution agencies, including the air pollution control districts and air quality management districts.

effective date

the date on which a provision has the effect of state law.

emission factor

a performance standard expressed as pounds of hydrocarbon per 1,000 gallons of gasoline dispensed.

Executive Order

a document issued by the Executive Officer that certifies a vapor recovery system.

existing installation

any gasoline dispensing facility that is not a new installation.

fugitive emissions
those emissions of hydrocarbon vapors emitted from a GDF due to evaporative loss from spillage or may also include those pressure-related fugitive emissions as defined below.

gastight
exhibiting no vapor leak(s).

gasoline
any petroleum distillate having a Reid vapor pressure of four pounds or greater and meeting the requirements of title 13, California Code of Regulations, section 2250 et seq.

gasoline dispensing facility
a facility which dispenses gasoline to the end user.

hold-open latch
a certified device which is an integral part of the dispensing nozzle and is manufactured specifically for the purpose of dispensing gasoline without requiring the consumer's physical contact with the nozzle during fueling operations.

incinerator
any assist processor designed to control hydrocarbon emissions by any kind of oxidation which generates exhaust which is so hot and variable in volume that such volume can only be determined by correlated measurements and thermodynamic principles, rather than direct measurement.

insertion Interlock
any certified mechanism which is an integral part of a bellows-equipped dispensing nozzle which prohibits the dispensing of fuel unless the bellows has been compressed.

leak detection solution
any solution containing soap, detergent or similar materials which promote formation of bubbles, and which is used to wet joints or surfaces from which gas may be leaking, and which causes bubbles to form at the site of any escaping gas.

leak free
a liquid leak of no greater than three drops per minute.

liquid condensate trap (knock-out pot, thief port)
a device designed to collect liquid that condenses in the vapor return line in a manner that allows it to be evacuated and ensures that the vapor return line will not be blocked by the accumulation of liquid.

liquid leak
the dripping of liquid organic compounds at a rate in excess of three (3) drops per minute from any single leak source other than the liquid fill line and vapor line disconnect operations. For cargo tanks, a liquid leak from liquid product line and vapor line disconnect operations is defined to be:

more than two (2) milliliters liquid drainage per disconnect from a top loading operation; or

more than ten (10) milliliters liquid drainage from a bottom loading operation. Such liquid drainage for disconnect operations shall be determined by computing the average drainage from three consecutive disconnects at any one permit unit.

liquid removal device

a device designed specifically to remove liquid from the vapor return portion of a vapor hose.

liquid retain

any liquid gasoline retained in the vapor passage of the nozzle/hose assembly, on the atmospheric side of the vapor check valve.

lower explosive limit (LEL)

the minimum volumetric fraction of combustible gas, in air, which will support the propagation of flame; commonly expressed in units of percent (%) or parts per million (ppm).

Standard references for physical properties of combustible gases differ by a few percent in their listed values for lower explosive limit (LEL) and differ also in terms employed. For clarity:

"LEL" shall mean the same as "lower limit of flammability," "lower end of the explosive range", and other related terms in common technical discourse.

The authoritative reference for determination of LEL values shall be the chapter GASEOUS FUELS, by C. C. Ward, pages 7-21 to 7-24 of *Marks' Standard Handbook for Mechanical Engineers*, Eighth Edition, McGraw Hill, New York, 1978.

The LEL for propane is 2.1% (21,000 ppm).

major modification

the modification of an existing GDF that makes it subject to the same requirements to which a new installation is subject.

Modification of the Phase I system that involves the addition, replacement, or removal of an underground storage tank, or modification that causes the tank top to be unburied, is considered a major modification of the Phase I system.

Modification of the Phase II system that involves the addition, replacement or removal of 50 percent or more of the buried vapor piping, or the replacement of dispensers, is considered a major modification of the Phase II system. The replacement of a dispenser is not a major modification when the replacement is occasioned by end user damage to a dispenser.

multi-product dispenser

a dispenser of multiple products with two or more hoses per dispenser side.

National Institute of Standards and Technology

the United States Department of Commerce, National Institute of Standards and Technology (NIST) which, through its Standard Reference Materials (SRM) Program, provides science, industry, and government with a source of well-characterized materials certified for chemical composition or for some chemical or physical property. These materials are designated SRMs and are used to calibrate instruments and to evaluate analytical methods and systems, or to produce scientific data that can be referred readily to a common base.

new installation
a gasoline dispensing facility that is not constructed as of the operative date of the latest amendments to Certification Procedure CP-201 or a gasoline dispensing facility constructed as of the operative date of the latest amendments to Certification Procedure CP-201 that has undergone a major modification on or after the operative date of the amendments.

novel
a modifier which indicates a vapor recovery system (or system feature) or facility to which the written procedures (of general applicability) do not apply; for such a novel system or facility, new system-specific or facility-specific performance specifications and test procedures shall be developed and required as conditions of certification.

nozzle bellows (nozzle boot)
the flexible device around the spout of some vapor recovery nozzles, utilized to contain the vapor displaced from the vehicle.

on-board refueling vapor recovery system
vehicle based system required by Title 13, California Code of Regulations, Section 1978, or Part 86, Code of Federal Regulations.

operative date
the date on which a regulated person is first required to act or is prohibited from acting.

over-fill prevention device
a device designed to stop the delivery of product to a storage tank to prevent the over-filling of the tank and potential spillage.

phase I
control of vapors during the transfer of gasoline from the cargo tank to the gasoline dispensing facility.

phase II
the control of vapors during the transfer of gasoline from the gasoline dispensing facility to the vehicle.

portable fuel container
any container or vessel that is designed or used primarily for receiving, transporting, storing, and dispensing fuel.

pressure-related fugitive emissions
those emissions of hydrocarbon vapors emitted from a GDF due to a positive gauge pressure in the headspace (ullage) of the gasoline storage tank. These emissions do not include transfer emissions at the nozzle/fillpipe interface nor the emissions from the vent pipe P/V valve, provided that the cracking pressure of the P/V valve has been exceeded.

processor
a vapor processor, either destructive or non-destructive, utilized on a vacuum assist system.

Reid Vapor Pressure
the absolute vapor pressure of volatile petroleum liquids, except liquefied petroleum gases, as determined in accordance with ASTM D323-89.

spillage
liquid which enters the environment from a dispensing facility, except for liquid which leaves such dispensing facility in a vehicle tank or cargo tank.

The following definitions apply for the determination of spillage as defined above:

pre-dispensing spillage
spillage which occurs between the time when a dispensing nozzle is removed from a dispenser and the time when the dispensing nozzle is inserted into the tank receiving the dispensed liquid

dispensing spillage
spillage which occurs between the time when the dispensing nozzle is inserted into the tank receiving the dispensed liquid and the time when the dispensing nozzle is withdrawn from the tank receiving the dispensed liquid

post-dispensing spillage
spillage which occurs between the time when the dispensing nozzle is withdrawn from the tank receiving the dispensed liquid and the time when the dispensing nozzle is returned to a dispenser.

spitback
the forcible ejection of liquid gasoline upon activation of the nozzle's primary shutoff mechanism.

static torque of phase I adaptor
the amount of torque, measured as pound-inches, required to start the rotation of a rotatable phase I adaptor as measured in accordance with TP-201.1B.

submerged fillpipe
any fillpipe which has its discharge opening entirely submerged when the liquid level is six inches above the bottom of the tank.

when referring to a tank which is loaded from the side, any fillpipe which has its discharge opening entirely submerged when the liquid level is 18 inches above the bottom of the tank.

summer fuel
fuel that is required to comply with the requirements of title 13, California Code of Regulations, section 2262.4.

test procedures
specify equipment and techniques for determining the performance and compliance status of vapor recovery systems relative to certified performance standards and associated certified performance specifications.

terminal
a primary distribution facility for the loading of cargo tanks that deliver gasoline to bulk plants, service stations and other distribution points; and where delivery to the facility storage tanks is by other than by cargo tank.

top off
the attempt to dispense gasoline to a motor vehicle or utility equipment fuel tank after the dispensing nozzle primary shutoff mechanism has engaged. The filling of a class of vehicle tanks which, because of the configuration of the fill pipe, cause premature activation of the primary shutoff, shall not be considered topping off.

transition flow
the flow rate at which a transition occurs in the slope of the plot of flow rate versus pressure for a valve tested per TP-201.2B.

ullage
the empty volume of any container. For example, the ullage of a tank designed primarily for containing liquid is the volume of the tank minus the volume of the liquid.

underground storage tank
any one or combination of tanks, including pipes connected thereto, which is used for the storage of gasoline and which is substantially or totally beneath the surface of the ground.

unihose dispenser
a multi-product dispenser that has only hose and nozzle per dispenser side.

vapor guard (mini-boot)
a device that is permanently installed at the base of a bootless vapor recovery nozzle spout to enhance the effectiveness of vapor collection.

vapor leak
a vapor leak measured as less 10,000 parts per million on a methane calibrated gas detector, measured at a minimum distance of one centimeter from the source in accordance with EPA Reference Method 21, compliance with the static pressure integrity requirements as determined by TP-201.3, or the absence of bubbles using a liquid leak detector solution.

vapor recovery system
a vapor gathering system capable of collecting the hydrocarbon vapors and gases discharged and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission into the atmosphere, with all tank gauging and sampling devices gastight except when gauging or sampling is taking place.

vapor recovery system for gasoline dispensing facility (GDF)
all equipment used at a GDF to recover, contain, and transfer gasoline vapors generated by refueling vehicle tanks, gasoline storage tanks, and portable fuel containers, including, but not limited to, dispensing equipment, couplers, fittings, processors, control boards, gauges, and monitors.

vent
any plumbing which conveys an air/vapor mixture from a vapor recovery system to the atmosphere.

winter fuel
fuel that is not required to comply with the regulations that are applicable to summer fuel.

3 ACRONYMS

ACF
actual cubic feet (see CF, CFH, and CFM) at sampling conditions.

APCD
one of California's Air Pollution Control Districts.

AQMD
one of California's Air Quality Management Districts.

A/L Ratio or A/L
air to liquid ratio.

ARB
Air Resources Board.

ARB Executive Officer or Executive Officer
the Executive Officer of the ARB or his or her authorized representative or designate.

AST
aboveground storage tank

CARB
California Air Resources Board.

CCR
California Code of Regulations.

CF
cubic feet.

CFR
Code of Federal Regulations.

CT#
cargo tank number issued by the Executive Officer.

CFH
cubic feet per hour.

CFM
cubic feet per minute.

DMS
California Department of Food and Agriculture, Division of Measurement Standards.

DOSH
California Department of Industrial Relations, Division of Occupational Safety and Health.

Eng. Eval.
engineering evaluation.

EO
Executive Order.

FID
flame ionization detector.

GC/FID
gas chromatograph with flame ionization detector.

GDF
gasoline dispensing facility.

H&SC
California Health and Safety Code.

ID
inside diameter.

ID#
identification number.

ISD
In-Station Diagnostics.

LDS
leak detection solution.

LEL
lower explosive limit.

LPM
liters per minute.

mmHg
millimeters of mercury (unit of pressure).

MPD
multi-product dispenser.

N_2
nitrogen gas.

NDIR
non-dispersive infrared.

NIST
National Institute of Standards and Technology.

ORVR
onboard refueling vapor recovery.

PV or P/V Valve
pressure/vacuum relief vent valve.

SFM
California State Fire Marshal.

Sec.
section.

Spec.
specification.

Std.
standard.

UST
underground storage tank.

WC
inches of water column (unit of pressure).

WC_g
inches of water column, gauge (unit of pressure).

Section II

CARB Vapor Recovery Test Procedure

TP-201.3

Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities

1 APPLICABILITY

Definitions common to all certification and test procedures are in:

D-200 Definitions for Certification Procedures and Test Procedures for Vapor Recovery Systems

For the purpose of this procedure, the term "ARB" refers to the State of California Air Resources Board, and the term "ARB Executive Officer" refers to the Executive Officer of the ARB or his or her authorized representative or designate.

1.1 This test procedure is used to quantify the vapor tightness of vapor recovery systems installed at gasoline dispensing facilities (GDF) equipped with pressure/vacuum (P/V) valves, provided that the designed pressure setting of the P/V valves is a minimum of 2.5 inches of water column (inches H_2O).

1.2 Systems equipped with a P/V valve(s) allowed to have a designed cracking pressure less than 2.5 inches H_2O shall be bagged to eliminate any flow contribution through the valve assembly from the test results. The valve/vent pipe connection, however, shall remain unobstructed during this test.

1.3 At facilities not required to be equipped with a P/V valve(s), the vent pipe(s) shall be capped. For those installations, the test may be conducted at the vent pipe(s).

2 PRINCIPLE AND SUMMARY OF TEST PROCEDURE

2.1 The entire vapor recovery system is pressurized with nitrogen to two (2.0) inches H_2O. The system pressure is then allowed to decay and the pressure after five (5) minutes is compared with an allowable value. The minimum allowable five-minute final pressure is based on the system ullage and pressure decay equations. For the purpose of compliance determination, this test shall be conducted after all back-filling, paving, and installation of all Phase I and Phase II components, including P/V valves, has been completed.

2.2 For GDF equipped with a coaxial Phase I system, this test shall be conducted at a Phase II vapor riser. For GDF which utilize a two-point Phase I system, this test may be conducted at either a Phase II riser or a Phase I vapor coupler provided that the criteria set forth in Section 6.7 have been met. If the integrity criteria for two-point systems specified in Section 6.7 are met, it is recommended that this test be conducted at the Phase I vapor coupler.

3 RANGE

3.1 If mechanical pressure gauges are employed, the full-scale range of pressure gauges shall be 0-2.0, 0-1.0, and 0-0.50 inches H_2O column. Maximum incremental graduations of the pressure gauge shall be 0.05 inches H_2O and the minimum accuracy of the gauge shall be three percent of full scale. The minimum diameter of the pressure gauge face shall be 4 inches.

3.2 If an electronic pressure measuring device is used, the full-scale range of the device shall not exceed 0-10 inches H_2O with a minimum accuracy of 0.5 percent of full-scale. A 0-20 inches H_2O device may be used, provided the equivalent accuracy is not less than 0.25 percent of full-scale.

3.3 The minimum total ullage, for each individual tank, shall be 1,000 gallons or 25% of the tank capacity, whichever is less. The maximum total ullage, for all manifolded tanks, shall not exceed 25,000 gallons. These values are exclusive of all vapor piping volumes.

3.4 The minimum and maximum nitrogen feed-rates, into the system, shall be one (1) and five (5) CFM, respectively.

4 INTERFERENCES

4.1 Introduction of nitrogen into the system at flowrates exceeding five (5) CFM may bias the results of the test toward non-compliance. Only gaseous nitrogen shall be used to conduct this test. Air, liquefied nitrogen, helium, or any gas other than nitrogen shall not be used for this test procedure.

4.2 For vacuum-assist Phase II systems which utilize an incinerator, power to the collection unit and the processor shall be turned off during testing.

4.3 For vacuum-assist systems, with positive displacement vacuum pumps, which locate the vacuum producing device in-line between the Phase II vapor riser and the storage tank, the following requirements shall apply:

4.3.1 A valve shall be installed at the vacuum producing device. When closed, this valve shall isolate the vapor passage downstream of the vacuum producing device.

4.3.2 The storage tank side of the vacuum producing device shall be tested in accordance with the procedures outlined in Section 7 of this method. Compliance shall be determined by comparing the final five-minute pressure with the allowable minimum five-minute final pressure from the first column (1-6 affected nozzles) in Table IB or use the corresponding equation in Section 9.2.

4.3.3 The upstream vapor passage (nozzle to vacuum producing device) shall also be tested. Methodology for this test shall be submitted to the California Air Resources Board (CARB) for approval prior to submission of test results or shall be conducted in accordance with the procedures set forth in the applicable CARB Executive Order.

4.4 The results of this static pressure integrity test shall not be used to verify compliance if an Air to Liquid Volumetric Ratio Test (TP-201.5 or equivalent) was conducted within 24 hours prior to this test.

4.5 Thermal Bias for Electronic Manometers

Electronic manometers shall have a warm-up period of at least 15 minutes followed by a five minute drift check. If the drift exceeds 0.01 inches water column, the instrument should not be used.

5 APPARATUS

5.1 Nitrogen

Use commercial grade nitrogen in a high pressure cylinder, equipped with a two-stage pressure regulator and a one psig pressure relief valve.

5.2 Pressure Measuring Device

Use 0-2.0, 0-1.0, and 0-0.50 inches H_2O pressure gauges connected in parallel, a 0-2 inches H_2O manometer, or an electronic pressure measuring device to monitor the pressure decay in the vapor recovery system. The pressure measuring device shall, at a minimum, be readable to the nearest 0.05 inches H_2O.

5.3 "T" Connector Assembly

See Figure 1 for example.

5.4 Vapor Coupler Integrity Assembly

Assemble OPW 633-A, 633-B, and 634-A adapters, or equivalent, as shown in Figure 2. If the test is to be conducted at the storage tank Phase I vapor coupler, this assembly shall be used prior to conducting the static leak test in order to verify the pressure integrity of the vapor poppet. The internal volume of this assembly shall not exceed 0.1 cubic feet.

5.5 Vapor Coupler Test Assembly

Use a compatible OPW 634-B cap, or equivalent, equipped with a center probe to open the poppet, a pressure measuring device to monitor the pressure decay, and a connection for the introduction of nitrogen into the system. See Figure 3 for an example.

5.6 Stopwatch

Use a stopwatch accurate to within 0.2 seconds.

5.7 Flow Meter

Use a Dwyer flowmeter, Model RMC-104, or equivalent, to determine the required pressure setting of the delivery pressure gauge on the nitrogen supply pressure regulator. This pressure shall be set such that the nitrogen flowrate is between 1.0 and 5.0 CFM.

5.8 Combustible Gas Detector

A Bacharach Instrument Company, Model 0023-7356, or equivalent, may be used to verify the pressure integrity of system components during this test.

5.9 Leak Detection Solution

Any liquid solution designed to detect vapor leaks may be used to verify the pressure integrity of system components during this test.

6 PRE-TEST PROCEDURES

6.1 The following safety precautions shall be followed:

6.1.1 Only nitrogen shall be used to pressurize the system.

6.1.2 A one psig relief valve shall be installed to prevent the possible over-pressurizing of the storage tank.

6.1.3 A ground strap should be employed during the introduction of nitrogen into the system.

6.2 Failure to adhere to any or all of the following time and activity restrictions shall invalidate the test results:

6.2.1 There shall be no Phase I bulk product deliveries into or out of the storage tank(s) within the three (3) hours prior to the test or during performance of this test procedure.

6.2.2 There shall be no product dispensing within thirty (30) minutes prior to the test or during performance of this test procedure.

6.2.3 Upon commencement of the thirty minute "no dispensing" portion of this procedure, the headspace pressure in the tank shall be measured. If the pressure exceeds 0.50 inches H_2O, the pressure shall be carefully relieved in accordance with all applicable safety requirements. After the thirty minute "no dispensing" portion of this procedure, and prior to introduction of nitrogen, the headspace pressure shall again be lowered, if necessary, to less than 0.50 inches H_2O.

6.2.4 There shall be no Air to Liquid Volumetric Ratio Test (TP-201.5 or equivalent) conducted within the twenty-four (24) hour period immediately prior to this test.

6.2.5 The test shall be conducted with the station in normal operating mode. This includes all nozzles properly hung up in the dispenser boots and all dispenser cabinet covers in place. The exception to normal operating mode is that dispensing is disallowed as specified.

6.3 Measure the gallons of gasoline present in each underground storage tank and determine the actual capacity of each storage tank from facility records. Calculate the ullage space for each tank by subtracting the gasoline gallonage present from the actual tank capacity. The minimum ullage during the test, for all manifolded tanks, shall be 1,000 gallons or 25 percent of the tank capacity, whichever is less. The total ullage, for all manifolded tanks, shall not exceed 25,000 gallons.

6.4 For two-point Phase I systems, this test shall be conducted with the dust cap removed from both the product and the vapor coupler. This is necessary to determine the vapor tightness of the Phase I vapor poppet. See Section 6.7 if this test is to be conducted at the Phase I vapor coupler.

6.4.1 For coaxial Phase I systems, this test shall be conducted with the dust cap removed from the Phase I coupler. This is necessary to insure the vapor tightness of the PhaseÿI vapor poppet.

6.4.2 Verify that the liquid level in the storage tank is at least four (4) inches above the highest opening at the bottom of the submerged drop tube.

6.5 If the Phase I containment box is equipped with a drain valve, this test shall be conducted with the drain valve installed and the manhole cover removed. If the drain valve is cover-actuated, the test shall be done once with the cover removed and repeated with the cover installed.

6.6 If the test is to conducted at a Phase II vapor riser, disconnect the dispenser end of one vapor recovery hose and install the "T" connector assembly (see Figure 1). Connect the nitrogen gas supply (do not use air) and the pressure measuring device to the "T" connector.

6.6.1 For those Phase II vapor systems utilizing a dispenser mounted remote vapor check valve, the "T" connector assembly shall be installed on the vapor riser side of the check valve.

6.7 If this test is to be conducted at the Phase I vapor coupler on a two-point Phase I system, the procedures set forth in subsections 6.7.1 and 6.7.2 shall be successfully completed prior to testing. The static pressure integrity test shall not be conducted at the Phase I coupler at facilities equipped with coaxial Phase I systems.

6.7.1 Connect the Vapor Coupler Integrity Assembly to the Phase I vapor coupler. Connect the Vapor Coupler Test Assembly. Connect the nitrogen supply to the assembly and carefully pressurize the internal volume of the assembly to two (2.0) inches H_2O. Start the stopwatch. Record the final pressure after one minute.

6.7.2 If the pressure after one minute is less than 0.25 inches H_2O, the leak rate through the Phase I vapor poppet precludes conducting the static leak test at this location. If the pressure after one minute is greater than or equal to 0.25 inches H_2O, the static leak test may be conducted at this location. This criteria assures a maximum leak rate through the Phase I vapor poppet of less than 0.0004 cubic feet per minute.

6.7.3 Disconnect the Vapor Coupler Integrity Assembly to the Phase I vapor coupler. If the requirements of subsection 6.7.2 were met, connect the Vapor Coupler Test Assembly to the Phase I vapor coupler.

6.7.4 Product may be poured onto the Phase I vapor coupler to check for leaks. This diagnostic procedure shall not be substituted for the procedures set forth in subsections 6.7.1 and 6.7.2.

6.8 All pressure measuring device(s) shall be bench calibrated using either a reference gauge or incline manometer. Calibration shall be performed at 20, 50, and 80 percent of full scale. Accuracy shall be within two percent at each of these calibration points. Calibrations shall be conducted on a frequency not to exceed 90 days.

6.9 Use the flowmeter to determine the nitrogen regulator delivery pressures which correspond to nitrogen flowrates of 1.0 and 5.0 CFM. These pressures define the allowable range of delivery pressures acceptable for this test procedure. Also record the regulator delivery pressure setting, and the corresponding nitrogen flowrate that will be used during the test. As an alternative, the flowmeter may be connected, in-line between the nitrogen supply regulator and Vapor Coupler Test Assembly, during the test.

6.10 Use Equation 9.3 to calculate the approximate time required to pressurize the system ullage to the initial starting pressure of two (2.0) inches H_2O. This will allow the tester to minimize the quantity of nitrogen introduced into those systems which cannot comply with the static leak standards.

6.11 Attach the Vapor Coupler Test assembly to the Phase I poppet or the "T" connector assembly to the Phase II vapor riser. Read the initial pressure of the storage tank and underground piping. If the initial pressure is greater than 0.5 inches H_2O, carefully bleed off the pressure, in accordance with all applicable safety procedures, in the storage tank and underground piping to less than 0.5 inches H_2O column.

6.12 Any electronic manometers shall be subject to warm-up and drift check before use; see Section 4.5.

7 TESTING

7.1 Open the nitrogen gas supply valve and set the regulator delivery pressure within the allowable range determined in Section 6.9, and start the stopwatch. Pressurize the vapor system (or subsystem for individual vapor return line systems) to at least 2.2 inches H_2O initial pressure. It is critical to maintain the nitrogen flow until the pressure stabilizes, indicating temperature and vapor pressure stabilization in the tanks. Check the test equipment using leak detecting solution or a combustible gas detector to verify that all test equipment is leak tight. Note: if a combustible gas detector is used to search for leaks, components which were certified with an allowable leak rate, such as 0.38 CFH at a pressure of two (2) inches, cannot be determined to be faulty solely on the basis of the concentration registered on the instrument.

7.1.1 If the time required to achieve the initial pressure of two (2.0) inches H_2O exceeds twice the time derived from Equation 9.3, stop the test and use liquid leak detector, or a combustible gas detector, to find leak(s) in the system. Failure to achieve the initial starting pressure within twice the time derived from Equation 9.3 demonstrates the inability of the system to meet the performance criteria. Repair or replace the faulty component(s) and restart the test pursuant to Section 7.1.

7.2 Close and disconnect the nitrogen supply. Start the stopwatch when the pressure has decreased to the initial starting pressure of two (2.0) inches H_2O.

7.3 At one-minute intervals during the test, record the system pressure. After five minutes, record the final system pressure. See the applicable of Tables 1A (or Equation 9.1) or 1B (or equation 9.2) to determine the acceptability of the final system static pressure results. For intermediate values of ullage in Tables 1A and 1B, linear interpolation may be employed.

7.4 If the system failed to meet the criteria set forth in Table 1A or 1B (or the appropriate equation in Section 9), repressurize the system and check all accessible vapor connections using leak detector solution or a combustible gas detector. If vapor leaks in the system are encountered, repair or replace the defective component and repeat the test. Potential sources of leaks include nozzle check valves, nozzle vapor paths, pressure/vacuum relief valves, containment box drain valve assemblies, and plumbing connections at the risers.

7.4.1 If the facility fails to comply with the static leak test standards and the two point Phase I system utilizes overfill prevention devices in the drop tubes which were installed before July 1, 1993, and which are unable to pass the test with the dust caps removed from the product and vapor couplers (see Sec. 6.4), the test may be conducted with the caps on the couplers, as an exception.

This exception is not intended to allow bleed holes in drop tubes.

This exception expires on January 1, 2002, after which date all testing shall be conducted with the fill and vapor caps removed from two point systems. Under no circumstances may the test be conducted with the caps on coaxial Phase I couplers.

7.5 After the remaining system pressure has been relieved, remove the "T" connector assembly and reconnect the vapor recovery hose, if applicable.

7.6 If the vapor recovery system utilizes individual vapor return lines, repeat the leak test for each gasoline grade. Avoid leaving any vapor return line open longer than is necessary to install or remove the "T" connector assembly.

7.7 If the applicable CARB Executive Order requires the test to be conducted with and without the containment box cover in place, repeat the test with the cover in place. In these cases clearly specify, on Form 1, which results represent the pressure integrity with and without the cover in place.

8 POST-TEST PROCEDURES

8.1 Use the applicable of Table 1A or 1B, or the applicable of Equations 9.1 or 9.2, to determine the compliance status of the facility by comparing the final five-minute pressure with the minimum allowable final pressure.

8.1.1 For balance Phase II systems use Table 1A or the applicable of Equation 9.1 to determine compliance.

8.1.2 For vacuum-assist Phase II systems use Table 1B or the applicable of Equation 9.2 to determine compliance.

9 CALCULATIONS

9.1 For Phase II Balance Systems, the minimum allowable five-minute final pressure, with an initial pressure of two (2.0) inches H_2O, shall be calculated as follows:

[Equation 9-1]

$$P_f = 2e^{\frac{-760.490}{(V)}} \qquad if\ N = 1-6$$

$$P_f = 2e^{\frac{-792.196}{(V)}} \qquad if\ N = 7-12$$

$$P_f = 2e^{\frac{-824.023}{(V)}} \qquad if\ N = 13-18$$

$$P_f = 2e^{\frac{-855.974}{(V)}} \qquad if\ N = 19-24$$

$$P_f = 2e^{\frac{-888.047}{(V)}} \qquad if\ N > 24$$

where:

N = The number of affected nozzles. For manifolded systems, N equals the total number of nozzles. For dedicated plumbing configurations, N equals the number of nozzles serviced by the tank being tested.

P_f = The minimum allowable five-minute pressure, inches H_2O

V = The total ullage affected by the test, gallons

e = A dimensionless constant approximately equal to 2.718

2 = The initial starting pressure, inches H_2O

9.2 For Phase II Vacuum Assist Systems, the minimum allowable five-minute final pressure, with an initial pressure of two (2.0) inches H_2O, shall be calculated as follows:

[Equation 9-2]

$$P_f = 2e^{\frac{-500.887}{(V)}} \qquad if\ N = 1-6$$

$$P_f = 2e^{\frac{-531.614}{(V)}} \qquad if\ N = 7-12$$

$$P_f = 2e^{\frac{-562.455}{(V)}} \qquad if\ N = 13-18$$

$$P_f = 2e^{\frac{-593.412}{(V)}} \qquad if\ N = 19-24$$

$$P_f = 2e^{\frac{-624.483}{(V)}} \qquad if\ N > 24$$

where:

N = The number of affected nozzles. For manifolded systems, N equals the number of nozzles. For dedicated plumbing configurations, N equals the number of nozzles serviced by the tank being tested.

P_f = The minimum allowable five-minute final pressure, inches H_2O

V = The total ullage affected by the test, gallons

e = A dimensionless constant approximately equal to 2.718

2 = The initial starting pressure, inches H_2O

9.3 The minimum time required to pressurize the system ullage from zero (0) to two (2.0) inches H_2O gauge pressure shall be calculated as follows:

[Equation 9-3]

$$t_2 = \frac{V}{(1980)F}$$

where:

t_2 = The minimum time to pressurize the ullage to two inches H_2O, minutes

V = The total ullage affected by the test, gallons

F = The nitrogen flowrate into the system, CFM

1980 = The conversion factor for pressure and gallons

9.4 If the policy of the local District requires an allowable tolerance for testing error, the minimum allowable five-minute final pressure, including testing error, shall be calculated as follows:

[Equation 9-4]

$$P_{f-E} = 2 - \left[1 + \left(\frac{E}{100}\right)\right]\left[408.9 - \left(P_f + 406.9\right)\right]$$

where:

P_f-E = The minimum allowable five-minute final pressure including allowable testing error, inches H_2O

E = The allowable testing error, percent

P_f = The minimum allowable five-minute final pressure calculated in Equations 9-1 or 9-2, inches H_2O

2 = The initial starting pressure, inches H_2O

408.9 = Atmospheric pressure plus the initial starting pressure, inches H_2O

406.9 = Atmospheric pressure, inches H_2O

10 REPORTING

10.1 The calculated ullage and system pressures for each five-minute vapor recovery system test shall be reported as shown in Form 1. Be sure to include the Phase I system type (two-point or coaxial), the Phase II system type, whether the system is manifolded, and the one-minute pressures during the test.

TABLE 1A:

PHASE II BALANCE SYSTEMS

PRESSURE DECAY CRITERIA

INITIAL PRESSURE OF 2 INCHES WATER COLUMN (WC)

MINIMUM PRESSURE AFTER 5 MINUTES, INCHES WC

Ullage, Gallons	Number of Affected Nozzles				
	01-06	07-12	13-18	19-24	>24
500	0.44	0.41	0.38	0.36	0.34
550	0.50	0.47	0.45	0.42	0.40
600	0.56	0.53	0.51	0.48	0.46
650	0.62	0.59	0.56	0.54	0.51
700	0.67	0.64	0.62	0.59	0.56
750	0.73	0.70	0.67	0.64	0.61
800	0.77	0.74	0.71	0.69	0.66
850	0.82	0.79	0.76	0.73	0.70
900	0.86	0.83	0.80	0.77	0.75
950	0.90	0.87	0.84	0.81	0.79
1,000	0.93	0.91	0.88	0.85	0.82
1,200	1.06	1.03	1.01	0.98	0.95
1,400	1.16	1.14	1.11	1.09	1.06
1,600	1.24	1.22	1.19	1.17	1.15
1,800	1.31	1.29	1.27	1.24	1.22
2,000	1.37	1.35	1.32	1.30	1.28
2,200	1.42	1.40	1.38	1.36	1.34
2,400	1.46	1.44	1.42	1.40	1.38
2,600	1.49	1.47	1.46	1.44	1.42
2,800	1.52	1.51	1.49	1.47	1.46
3,000	1.55	1.54	1.52	1.50	1.49
3,500	1.61	1.59	1.58	1.57	1.55
4,000	1.65	1.64	1.63	1.61	1.60
4,500	1.69	1.68	1.67	1.65	1.64
5,000	1.72	1.71	1.70	1.69	1.67
6,000	1.76	1.75	1.74	1.73	1.72
7,000	1.79	1.79	1.78	1.77	1.76
8,000	1.82	1.81	1.80	1.80	1.79
9,000	1.84	1.83	1.83	1.82	1.81
10,000	1.85	1.85	1.84	1.84	1.83
15,000	1.90	1.90	1.89	1.89	1.89
20,000	1.93	1.91	1.92	1.92	1.91
25,000	1.94	1.94	1.94	1.93	1.93

Note: For manifolded Phase II Balance Systems, the "Number of Affected Nozzles" shall be the total of all gasoline nozzles. For dedicated return configurations, the "Number of Affected Nozzles" shall be the total of those nozzles served by the tank being tested.

TABLE 1B

PHASE II ASSIST SYSTEMS

PRESSURE DECAY CRITERIA

INITIAL PRESSURE OF 2 INCHES WATER COLUMN (WC)

MINIMUM PRESSURE AFTER 5 MINUTES, INCHES WC

Ullage, Gallons	Number of Affected Nozzles				
	01-06	07-12	13-18	19-24	>24
500	0.73	0.69	0.65	0.61	0.57
550	0.80	0.76	0.72	0.68	0.64
600	0.87	0.82	0.78	0.74	0.71
650	0.93	0.88	0.84	0.80	0.77
700	0.98	0.94	0.90	0.86	0.82
750	1.03	0.98	0.94	0.91	0.87
800	1.07	1.03	0.99	0.95	0.92
850	1.11	1.07	1.03	1.00	0.96
900	1.15	1.11	1.07	1.03	1.00
950	1.18	1.14	1.11	1.07	1.04
1,000	1.21	1.18	1.14	1.10	1.07
1,200	1.32	1.28	1.25	1.22	1.19
1,400	1.40	1.37	1.34	1.31	1.28
1,600	1.46	1.43	1.41	1.38	1.35
1,800	1.51	1.49	1.46	1.44	1.41
2,000	1.56	1.53	1.51	1.49	1.46
2,200	1.59	1.57	1.55	1.53	1.51
2,400	1.62	1.60	1.58	1.56	1.54
2,600	1.65	1.63	1.61	1.59	1.57
2,800	1.67	1.65	1.64	1.62	1.60
3,000	1.69	1.68	1.66	1.64	1.62
3,500	1.73	1.72	1.70	1.69	1.67
4,000	1.76	1.75	1.74	1.72	1.71
4,500	1.79	1.78	1.77	1.75	1.74
5,000	1.81	1.80	1.79	1.78	1.77
6,000	1.84	1.83	1.82	1.81	1.80
7,000	1.86	1.85	1.85	1.84	1.83
8,000	1.88	1.87	1.86	1.86	1.85
9,000	1.89	1.89	1.88	1.87	1.87
10,000	1.90	1.90	1.89	1.88	1.88
15,000	1.93	1.93	1.93	1.92	1.92
20,000	1.95	1.95	1.94	1.94	1.94
25,000	1.96	1.96	1.96	1.95	1.95

Note: For manifolded Phase II Assist Systems, the "Number of Affected Nozzles" shall be the total of all gasoline nozzles. For dedicated return configurations, the "Number of Affected Nozzles" shall be t he total of those nozzles served by the tank being tested.

FORM 1

SUMMARY OF SOURCE TEST DATA

SOURCE INFORMATION		FACILITY PARAMETERS
GDF Name and address	GDF Representative and Title	PHASE II SYSTEM TYPE (Check One)
	GDF Phone No. ( )	Balance Hirt Red Jacket Hasstech Healy Other
Permit Conditions	Source: GDF Vapor Recovery System	
	GDF #	
	A/C #	Manifolded? Y or N

Operating Parameters

Number of Nozzles Served by Tank #1 Number of Nozzles Served by Tank #3

Number of Nozzles Served by Tank #2 Number of Nozzles Served by Tank #4

Applicable Regulations:	VN Recommended

Source Test Results and Comments

Tank #:	1	2	3	4
1. Product Grade				
2. Actual Tank Capacity, gallons				
3. Gasoline Volume				
4. Ullage, gallons (#2-#3)				
5. Initial Pressure, inches H_2O				
6. Pressure After 1 Minute, inches H_2O				
7. Pressure After 2 Minutes, inches H_2O				
8. Pressure After 3 Minutes, inches H_2O				
9. Pressure After 4 Minutes, inches H_2O				
10. Final Pressure After 5 Minutes, inches H_2O				
11. Allowable Final Pressure				

Test Conducted by:	Test Company:	Date of Test:

FORM 1 (continued)

FACILITY SKETCH AND COMMENTS

Diagram
Show location of tanks, dispensers, buildings, and vents.

Comments

Figure 1

"T" Connector Assembly

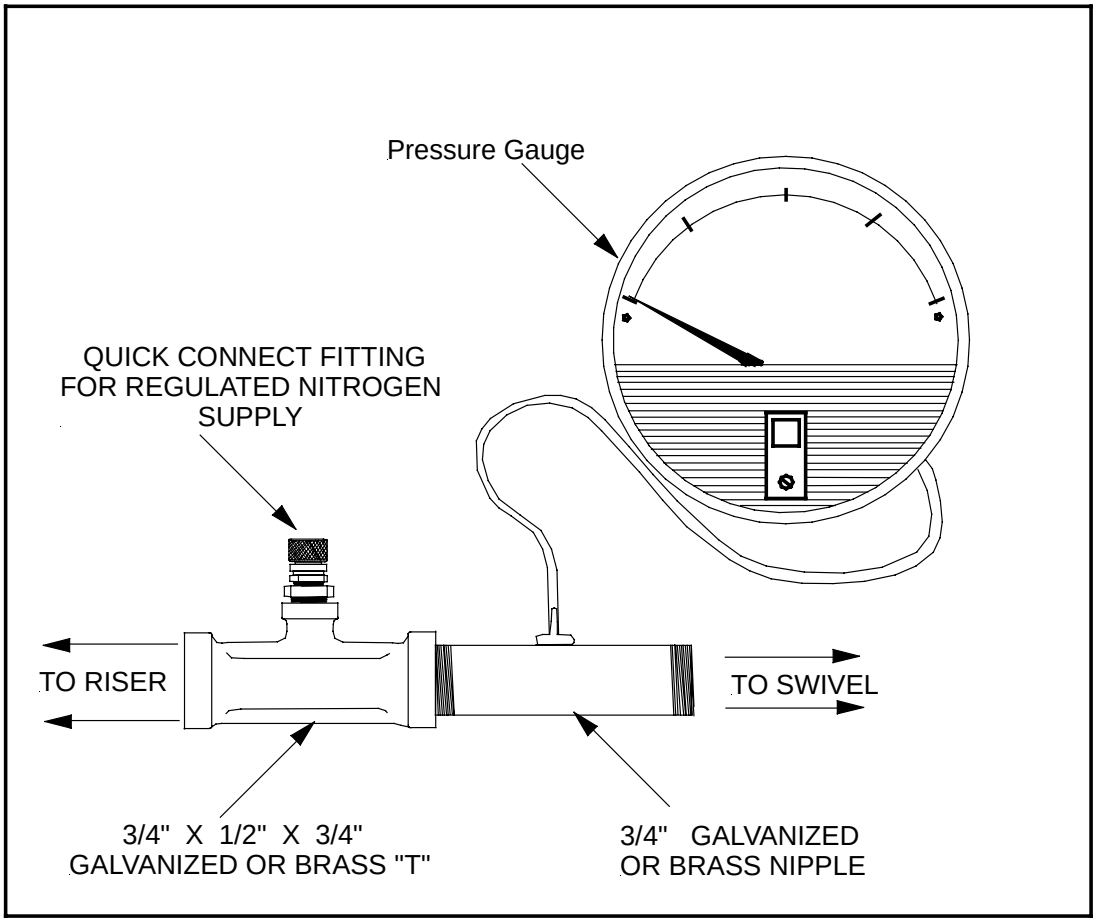


Figure 2

Vapor Coupler Integrity Assembly

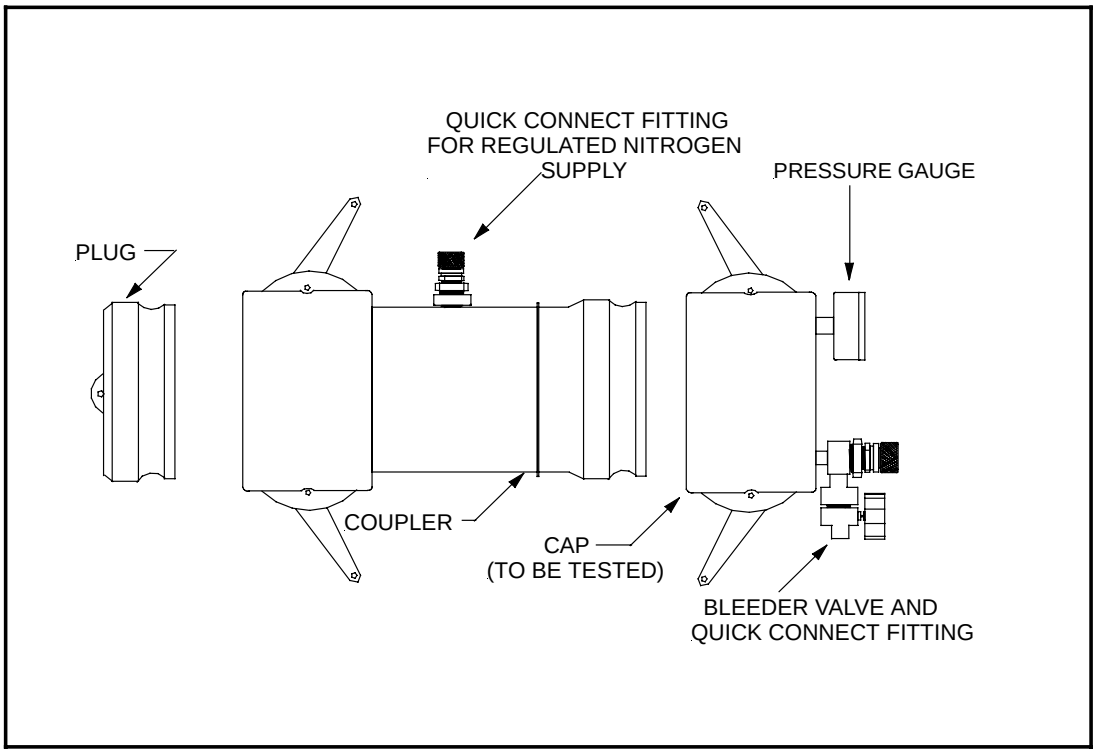
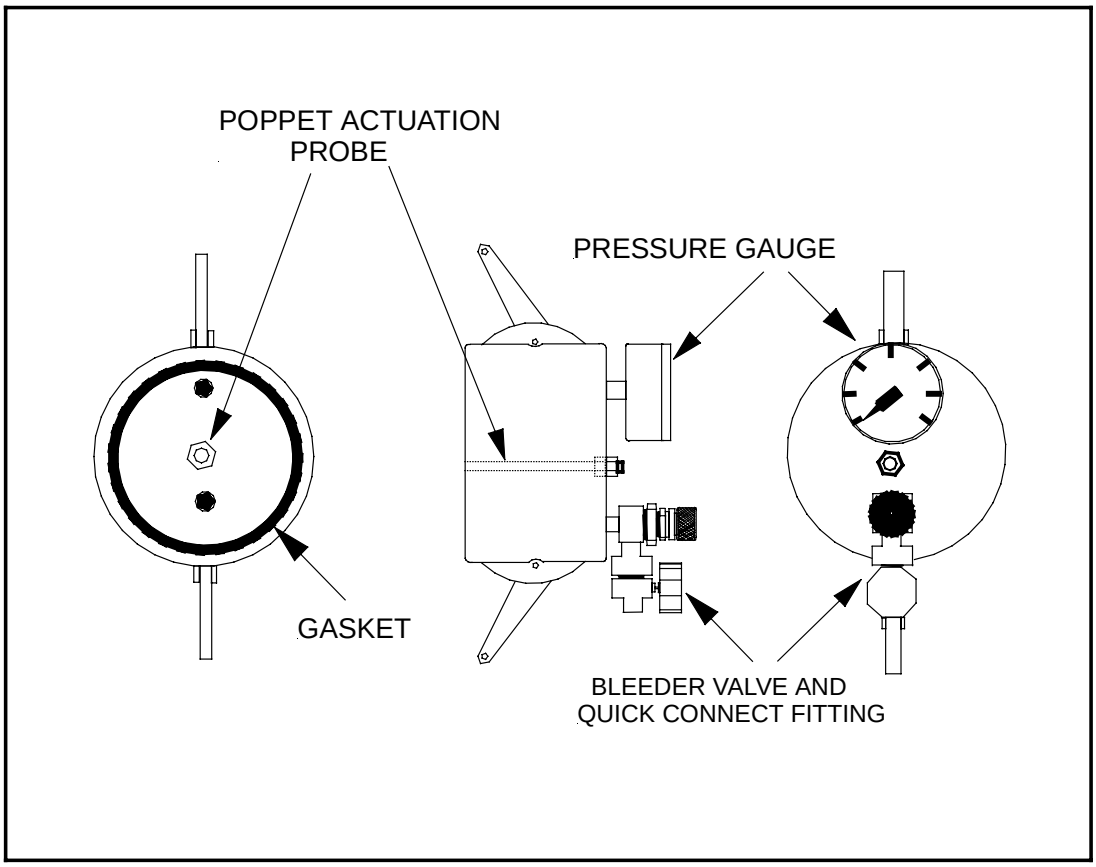


Figure 3
Vapor Coupler Test Assembly



Section III

California Environmental Protection Agency Air Resources Board

Vapor Recovery Test Procedure

TP-201.4

Dynamic Back Pressure

Definitions common to all certification and test procedures are in:

D-200 Definitions for Vapor Recovery Procedures

For the purpose of this procedure, the term "CARB" refers to the California Air Resources Board, and the term "Executive Officer" refers to the CARB Executive Officer, or his or her authorized representative or designate.

1. PURPOSE AND APPLICABILITY

1.1 This procedure is used to verify the applicable dynamic back pressure limits imposed on any gasoline vapor recovery system. The methodologies in this procedure are applicable for certification and compliance testing.

1.1.1 **Methodology 1**. This procedure is applicable if the dynamic back pressure standards are imposed from the nozzle to the gasoline storage tank, provided remote vapor check valves are not part of the Phase II system.

1.1.2 **Methodology 2**. This procedure is applicable if the dynamic back pressure standards are imposed from the nozzle to the gasoline storage tank and a remote vapor check valve is installed.

1.1.3 **Methodology 3**. This procedure is applicable if the dynamic back pressure standards are imposed from the nozzle to the gasoline storage tank and a remote vapor check valve that can be disabled by removing the poppet on the fuel side is installed.

1.1.4 **Methodology 4**. This procedure is applicable if the dynamic back pressure standards are imposed from the Phase II riser to the gasoline storage tank provided there is no vacuum-producing device located between the riser and tank.

1.1.5 **Methodology 5**. This procedure is applicable if the dynamic back pressure standards are imposed at the nozzle/vehicle interface during vehicle fueling.

1.1.6 **Methodology 6**. This procedure shall be conducted in conjunction with the applicable of Methodologies 1, 2, 3 or 4.

1.2 Unless the certification Executive Order specifies otherwise, compliance testing using Methodologies 1, 2, 3, 4 and 6 shall be conducted with the Phase I vapor poppet open, while Methodology 5 shall be conducted with the poppet closed.

1.3 For those systems possessing a design incompatible with this test procedure, compliance testing shall be conducted in accordance with the procedures specified in the applicable certification Executive Order. Appropriate certification testing shall be determined and conducted in accord with sound engineering principles and accepted engineering evaluation criteria.

2. PRINCIPLE AND SUMMARY OF TEST PROCEDURE

2.1 Using Methodologies 1, 2, 3, 4 or 6, the dynamic back pressure during vehicle fueling is simulated by passing nitrogen through the vapor recovery system at specified rates. The resultant dynamic back pressure is measured using a pressure gauge, or equivalent device. Methodologies 2 and 3 are included for those systems that utilize both bellows-equipped nozzles and a remote vapor check valve. Methodology 5 is a direct measurement of the pressure at the nozzle/fillpipe interface during gasoline dispensing.

3. BIASES AND INTERFERENCES

3.1 Any leaks in the nozzle vapor path, fillpipe interface, vapor hose, or underground vapor return piping may result in erroneously low dynamic back pressure measurements.

3.2 Testing of systems that have liquid condensate traps in the underground vapor return piping that contain liquid at the time of the test may result in erroneously high dynamic back pressure measurements.

3.3 Measuring dynamic back pressure without waiting a minimum of 30 seconds for the flow of nitrogen to stabilize may result in erroneous back pressure measurements.

4. SENSITIVITY, RANGE AND PRECISION

4.1 The minimum and maximum dynamic back pressures that can be measured are dependent upon available pressure gauges. The recommended mechanical or electronic pressure gauge ranges are described in Sections 4.2 and 4.3.

4.2 If mechanical pressure gauges are used, the minimum diameter of the gauge face shall be four inches; the minimum accuracy shall be 3.0 percent of full scale and the minimum readability shall be 5.0 percent of full scale.

4.2.1 **Methodology 1**. 0-0.5 and 0-1 inches H_2O.
4.2.2 **Methodology 2**. 0-0.5 and 0-1 inches H_2O.
4.2.3 **Methodology 3**. 0-0.5 and 0-1 inches H_2O.
4.2.4 **Methodology 4**. 0-0.25 inches H_2O.
4.2.5 **Methodology 5**. -1-0-+1 inches H_2O.
4.2.6 **Methodology 6.** 0-0.5 and 0-1 inches H_2O.

4.3 If an electronic pressure measuring device is used, the full-scale range of the device shall not exceed 0-10 inches H_2O with a minimum accuracy of 0.5 percent of full scale. A 0-20 inches H_2O device may be used provided the equivalent accuracy is not less than 0.25 percent of full-scale.

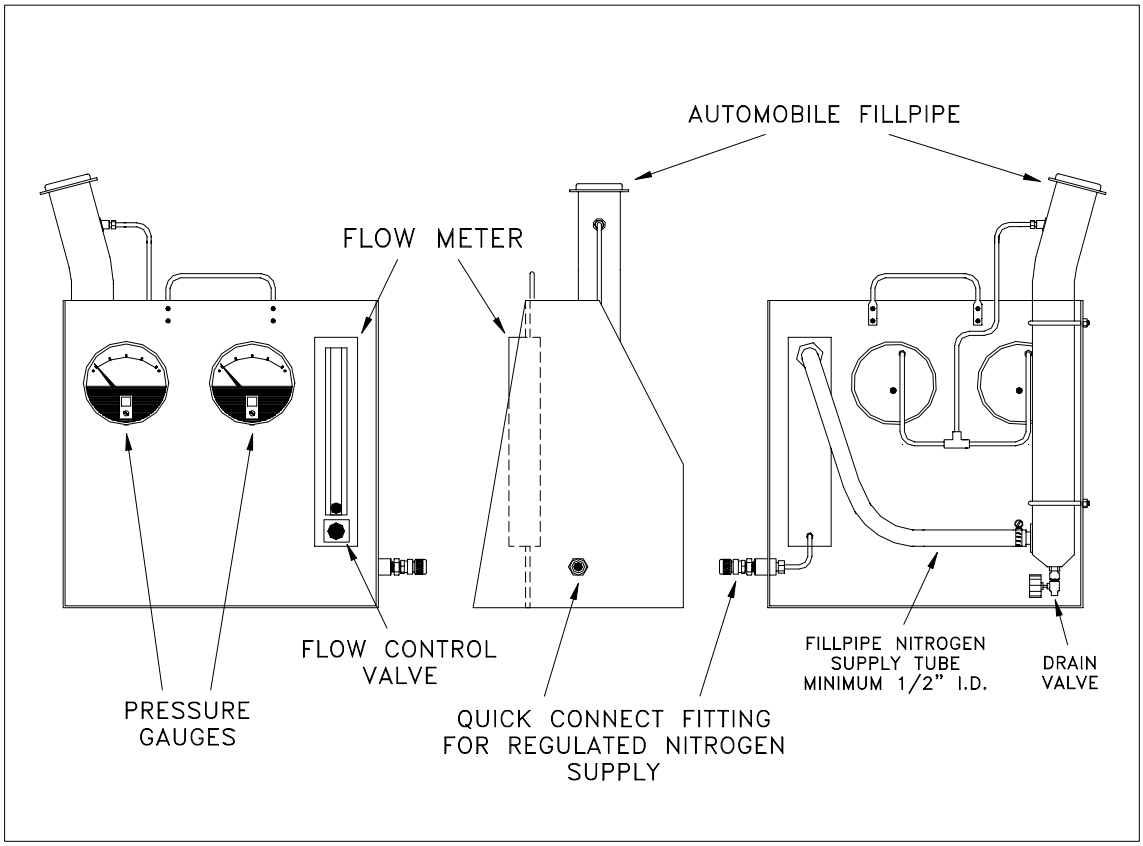
5. EQUIPMENT

5.1 Nitrogen High Pressure Cylinder with Pressure Regulator. Use a high pressure nitrogen cylinder capable of maintaining a pressure of at least 2000 psig and equipped with a compatible two-stage pressure regulator and a one psig relief valve. A ground strap is recommended during introduction of nitrogen into the system.

5.2 Rotameter. Use a calibrated rotameter capable of accurately measuring nitrogen flowrate(s) applicable for the imposed dynamic back pressure limits.

5.3 Pressure Gauges. Use differential pressure gauges as described in Sections 4.2 and 4.3.

Figure 1
Dynamic Back Pressure Test Assembly



5.4 Fillpipe. Use an automobile fillpipe, or equivalent, known to be compatible with all bellows-equipped vapor recovery nozzles, and equipped with a pressure tap. See Figure 1.

5.5 Nitrogen. Use commercial grade gaseous nitrogen in a high-pressure cylinder, equipped with a two-stage pressure regulator and a one psig pressure relief valve.

5.6 Hand Pump. Use a gasoline compatible hand pump, if applicable, to drain any gasoline from condensate pots.

5.7 Stopwatch. Use a stopwatch accurate to within 0.2 seconds to time the duration of the test.

5.8 Gasket. Use a flat gasket made of a gasoline compatible material with dimensions similar to the donut shown in Figure 4, to ensure proper seal between the nozzle and the Dynamic Back Pressure Assembly.

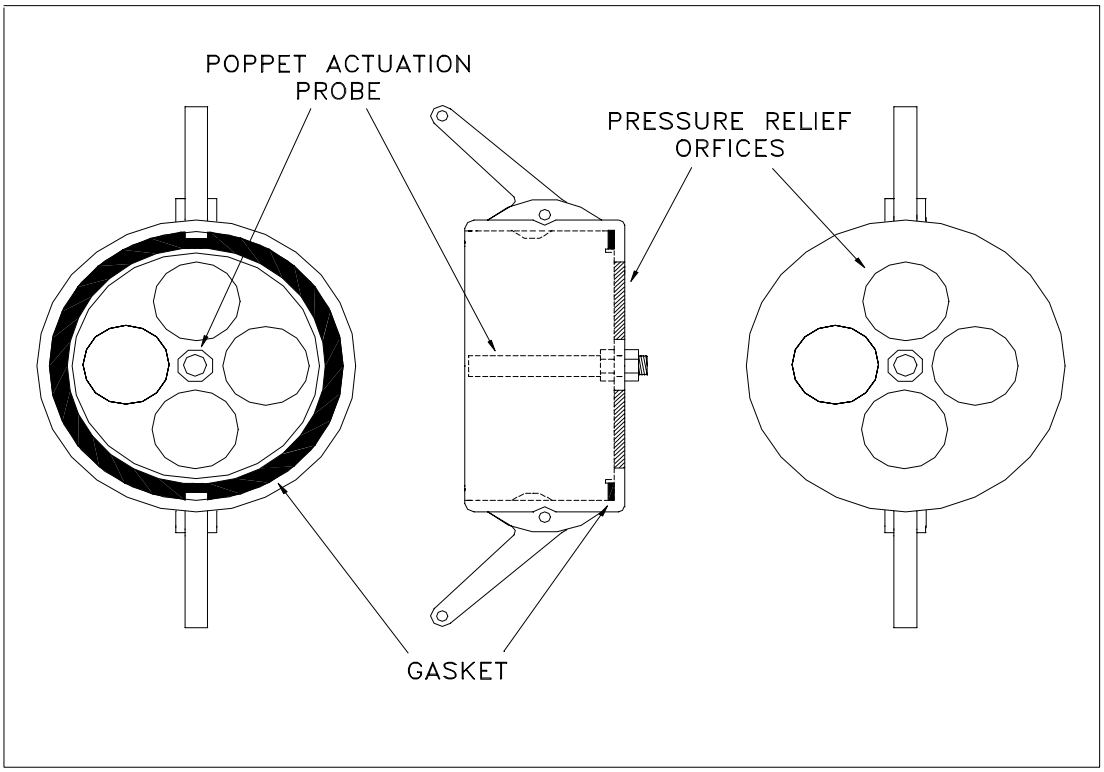
6. PRE-TEST PROCEDURES

6.1 **Methodologies 1, 2 & 3**. The following subsections are applicable for those Phase II systems where a limitation is imposed on the dynamic back pressure between the nozzle and the

gasoline storage tank. If a central vacuum system is used, this device shall be turned off during this test.

6.1.1 Assemble a Dynamic Back Pressure Test Assembly as shown in Figure 1, ensuring that the rotameter control valve is closed.

Figure 2
Dynamic Pressure Release Assembly

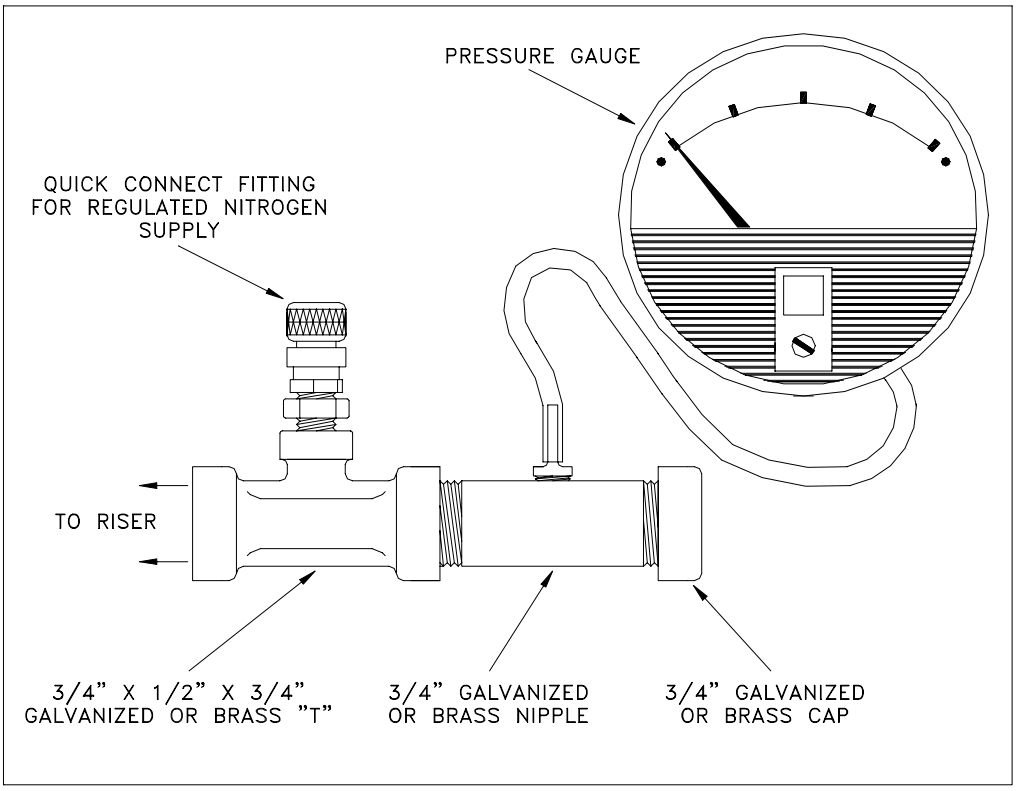


6.1.2 The test equipment must be leak-checked prior to use. Plug the nozzle end of the auto fillpipe on the Dynamic Back Pressure Assembly and open the nitrogen cylinder. Adjust the rotameter control valve until a pressure of 50 percent of full scale is indicated on the high range pressure gauge. Close the nitrogen cylinder valve and any toggle valves. A pressure decay of less than 0.2 inches H_2O, in five minutes, is considered acceptable.

6.1.3 With the Dynamic Back Pressure Assembly open to atmosphere, flow nitrogen through the assembly at each specified flowrate. Record any back pressure on the appropriate data sheet. Allow a minimum of 30 seconds for the nitrogen flow to stabilize before taking back pressure measurement.

6.1.4 Perform an initial visual examination for vapor leaks at the nozzle and hose of the Phase II system to be tested. All leak sources shall be repaired or the component(s) removed and replaced prior to testing.

Figure 3
Capped "T" Assembly



6.1.5 Pour a minimum of two (2) gallons of gasoline into each Phase II vapor return riser. This gasoline may be introduced into the Phase II riser in any appropriate manner. Alternatively, a minimum of twenty gallons of gasoline may be introduced into the Phase II riser furthest from the gasoline storage tank, provided that the riser is common to all products available at that dispenser. If product-specific risers are employed, a minimum of seven gallons, per product grade, may be introduced into the riser of each product that is furthest from the gasoline storage tank. The Districts may waive this requirement in facilities that have been in operation prior to the test. Allow at least fifteen (15) minutes for the liquid in the vapor return piping to drain.

6.1.6 Completely drain any gasoline from the spout and bellows.

6.1.7 For vapor piping configurations that utilize a liquid condensate pot, drain the pot prior to testing.

6.1.8 The Phase I vapor poppet shall be opened in such a manner that the valve is not damaged. This may be accomplished by using either a vapor recovery elbow or a Dynamic Pressure Release Assembly, as shown in Figure 2.

6.2 Methodology 4.

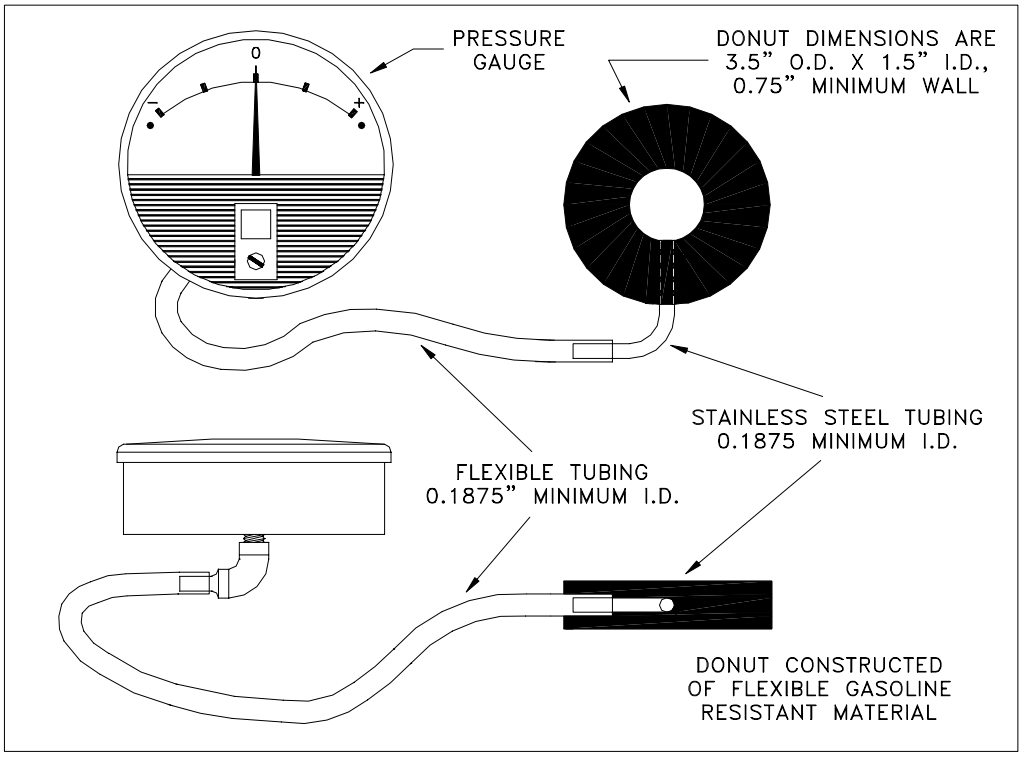
6.2.1 Assemble the Capped "T" Assembly as shown in Figure 3.

6.2.2 With the Capped "T" Assembly open to atmosphere, flow nitrogen through the assembly at each specified flowrate. Record any back pressure on the appropriate data sheet. Allow a minimum of 30 seconds for the nitrogen flow to stabilize before taking back pressure measurement.

6.2.3 Open the Phase I vapor poppet for the affected tank(s), using either methodology described in 6.1.8.

Figure 4

Donut Pressure Test Assembly



6.2.4 Pour a minimum of two (2) gallons of gasoline into each Phase II vapor return riser. This gasoline may be introduced into the riser in any appropriate manner.

6.5 Methodology 5.

6.5.1 Assemble the Donut Pressure Test Assembly as shown in Figure 4.

6.5.2 The Phase I vapor poppet shall remain closed during this test.

6.6 Methodology 6.

6.6.1 Assemble the Vent Pipe Pressure Assembly as shown in Figure 5.

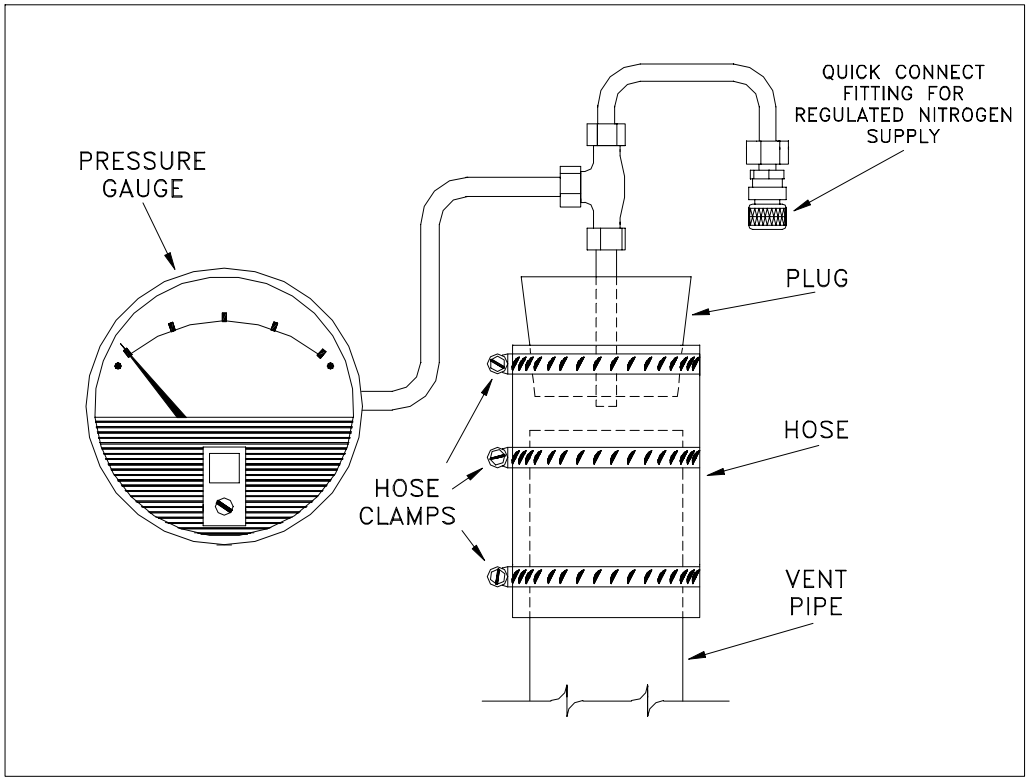
6.6.2 With the Vent Pipe Pressure Assembly open to atmosphere, flow nitrogen through the assembly at each specified flowrate. Record any back pressure on the appropriate data sheet. Allow a minimum of 30 seconds for the nitrogen flow to stabilize before taking back pressure measurement.

6.6.3 Carefully remove the vent pipe pressure/vacuum (P/V) valve.

6.6.4 Open the Phase I vapor poppet for the affected tank(s), using either methodology described in 6.1.8.

6.6.5 Insure that the collection unit of the Phase II system is turned off.

Figure 5
Vent Pipe Pressure Assembly



7. TEST PROCEDURE

7.1 Methodology 1. Insert the nozzle into the fillpipe of the Dynamic Back Pressure Test Unit. Ensure that a tight seal is achieved at the fillpipe/nozzle interface. This may be accomplished with the use of a "donut" shaped gasket, as described in Section 5.8

7.1.1 Connect the nitrogen supply to the test assembly.

7.1.2 Open the nitrogen cylinder, set the delivery pressure to 5 psig. Use the rotameter control valve to adjust the flowrate to lowest of the required nitrogen flowrates. Care must be taken to ensure that the initial flowrate through the rotameter does not exceed the lowest specified in the certification Executive Order. If nitrogen has been introduced in excess of the minimum flowrate, then liquid must be introduced, pursuant to section 6.1.5, to conduct a valid test. Allow a minimum of 30 seconds for the nitrogen flow to stabilize before taking back pressure measurement.

7.1.3 A pulsating gauge needle indicates nitrogen passing through a liquid obstruction in the vapor return system. If this occurs, close the rotameter control valve, disengage the nozzle, and redrain the nozzle and hose assembly. Re-engage the nozzle, open the rotameter control valve and repeat Section 7.1.2.

7.1.4 The following information shall be recorded on the field data sheet, as shown on Form 1:

(a) Dispenser Number and Product Grade
(b) Nozzle manufacturer and model
(c) Nitrogen flowrate, CFH

(d) Dynamic back pressure, inches H_2O

7.1.5 Repeat Sections 7.1.1 through 7.1.4 for each additional nitrogen flowrate specified in the certification Executive Order, from the lowest remaining flowrate to the highest.

7.1.6 Remove the vapor recovery elbow or Dynamic Pressure Release Assembly from the Phase I poppet and replace the dust cap.

7.2 Methodology 2. Phase II balance and Hirt systems, which utilize both bellows-equipped nozzles and a fuel-activated remote vapor check valve, may be tested using the following methodology.

7.2.1 Disconnect the vapor recovery hose from the remote vapor check valve. Test the nozzle/hose assembly pursuant to Section 7.1.1 through 7.1.4, and record the results on the field data sheet as shown in Form 2.

7.2.2 Disconnect the vapor check valve and connect a compatible "T" fitting, as shown in Figure 3, to the dispenser at that location.

7.2.3 Connect the nitrogen supply to the "T" assembly.

7.2.4 Repeat Sections 7.1.2 through 7.1.5. In addition to the information required in Section 7.1.4, record both the make and model of the remote vapor check valve.

7.2.5 Record on the field data sheet the pressure drop across the remote vapor check valve. This data is available from the manufacturer.

7.2.6 Add the dynamic back pressures, for each required nitrogen flowrate, obtained from Sections 7.2.1, 7.2.4 and 7.2.5 as shown in Form 2.

7.2.7 Disconnect the “T” fitting from the dispenser and re-connect the vapor check valve.

7.2.8 Remove the vapor recovery elbow or Dynamic Pressure Release Assembly from the Phase I poppet and replace the dust cap.

7.3 Methodology 3. Phase II balance and Hirt systems which use both bellows-equipped nozzles and those models of fuel-activated remote vapor check valves which can be disabled by removing the poppet on the fuel side may be tested using the following methodology. Phase II systems using an Emco-Wheaton A-228 remote vapor check valve cannot be tested using this methodology.

7.3.1 Carefully open the fuel side of the remote vapor check valve and remove the fuel poppet. Carefully replace the threaded plug on the fuel side of the valve.

7.3.2 Test the Phase II system pursuant to Sections 7.1.1 through 7.1.5, recording the data on the field data sheet shown in Form 1.

7.3.3 Carefully reassemble the remote vapor check valve by removing the plug on the fuel side and reinserting the fuel poppet. Replace the threaded fuel plug, taking care not to strip the threads.

7.3.4 Remove the vapor recovery elbow or Dynamic Pressure Release Assembly from Phase I poppet and replace dust cap.

7.4 Methodology 4. Those Phase II systems subject to regulatory limitations on the dynamic back pressure between the Phase II riser and gasoline storage tank may be tested using this methodology.

7.4.1 Disconnect the Phase II vapor riser and install the "T" assembly as shown in Figure 3.

7.4.2 Connect the nitrogen supply to the "T" assembly.

7.4.3 Open the nitrogen cylinder, set the delivery pressure to 5 psig. Use the rotameter control valve to adjust the flowrate to lowest of the required nitrogen flowrates. Care

must be taken to ensure that the initial flowrate through the rotameter does not exceed the lowest specified in the Executive Order. If nitrogen has been introduced in excess of the minimum flowrate, then liquid must be introduced, pursuant to section 6.1.5, to conduct a valid test. Allow a minimum of 30 seconds for the nitrogen flow to stabilize before taking back pressure measurement.

7.4.4 A pulsating gauge needle indicates nitrogen passing through a liquid obstruction in the vapor return system. If this occurs, close the rotameter control valve, disengage the nozzle, and redrain the nozzle and hose assembly. Re-engage the nozzle, open the rotameter control valve and repeat Section 7.4.3.

7.4.5 The following information shall be recorded on the field data sheet, as shown in Form 3:

(a) Dispenser Number and Product Grade
(b) Nitrogen flowrate, CFH
(c) Dynamic back pressure, inches H_2O

7.4.6 Repeat subsections 7.4.3 through 7.4.5 for all required nitrogen flowrates, as specified in CP-201.

7.4.7 Remove the "T" assembly and re-connect the Phase II vapor riser.

7.4.8 Remove the vapor recovery elbow or Dynamic Pressure Release Assembly from the Phase I poppet and replace the dust cap.

7.5 Methodology 5. Those bellows-equipped Phase II systems subject to regulatory limitations on the dynamic back pressure at the nozzle/fillpipe interface during gasoline dispensing shall use the following methodology.

7.5.1 Assemble the Donut Pressure Test Assembly, shown in Figure 4.

7.5.2 Insert the nozzle spout through the inner hole of the donut.

7.5.3 Insert and latch the nozzle in the vehicle fillpipe. Visually ensure that a tight connection is made between the donut and fillpipe.

7.5.4 Activate the dispenser and set the nozzle hold-open latch on low. After at least one gallon has been dispensed start the stopwatch. Dispense a minimum of four gallons of gasoline. The following data shall be recorded on the field data sheet as shown in Form 4:

(a) Dispenser Number and gasoline grade
(b) Gallons dispensed during test
(c) Maximum dynamic back pressure, inches H_2O
(d) Minimum dynamic back pressure, inches H_2O
(e) The average dispensing rate, gallons per minute

7.5.5 This Methodology shall only be conducted with the Phase I vapor poppet closed, since gasoline is being dispensed during the test.

7.6 Methodology 6. This procedure verifies proper drainage of gasoline from the base of the vent pipe to the gasoline storage tank.

7.6.1 After verifying certification or compliance with the dynamic back pressure standards, pursuant to the applicable of Methodologies 1, 2, 3, or 4, close the Phase I vapor poppet.

7.6.2 Remove the pressure/vacuum (P/V) valve(s) from each vent pipe.

7.6.3 Carefully pour a minimum of 5 gallons of gasoline down each vent pipe.

7.6.4 Wait at least 15 minutes.

7.6.5 Open the Phase I poppet(s) on all affected tanks, per section 6.1.8.

7.6.6 Install the Vent Pipe Pressure Assembly as shown in Figure 5.

7.6.7 Connect the nitrogen supply to the Vent Pipe Pressure Assembly.

7.6.8 Open the nitrogen cylinder and adjust the flowrate to 60 CFH.

7.6.9 After a minimum of 30 seconds, record the dynamic back pressure.

7.6.10 A dynamic back pressure, from the top of the vent pipe to the storage tank, of less than 0.5 inches H_2O shall be considered acceptable.

7.6.11 Repeat steps 7.6.6 through 7.6.10 for each vent stack that has a P/V valve.

7.6.12 Remove the Vent Pipe Pressure Assembly from the vent pipe and replace the pressure/vacuum (P/V) valve(s).

7.6.13 Remove the vapor recovery elbow or Dynamic Pressure Release Assembly from the Phase I poppet and replace the dust cap.

8. POST-TEST PROCEDURES

Refer to each methodology for the appropriate post-test procedure.

9. REPORTING RESULTS

9.1 Report the results of the dynamic back pressure test as shown below:

9.1.1	Methodology 1	Form 1
9.1.2	Methodology 2	Form 2
9.1.3	Methodology 3	Form 1
9.1.4	Methodology 4	Form 3
9.1.5	Methodology 5	Form 4
9.1.6	Methodology 6	Forms 1, 2, 3, or 4, as appropriate

10. ALTERNATE PROCEDURES

10.1 This procedure shall be conducted as specified. Modifications to this test procedure shall not be used to determine compliance unless prior written approval has been obtained from the ARB Executive Officer, pursuant to Section 14 of Certification Procedure CP-201.

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Form 1

	Dynamic Back Pressure **Source Test Results**	**Report No.:** **Test Date:** _____ **Test Times:** **Run A:** _____

Source Information		**Representatives**
Station Name and Address	Station Representative and Title Phone No. ( )	Source Test Engineers
Permit Conditions:	Source: **GDF Vapor Recovery** **GDF #** _____ **A/C #** _____	Permit Services Division/Enforcement Division Test Requested By:
Operating Parameters:		
Applicable Regulations:		VN Recommended:

Sources Test Results and Comments:

Nozzle #	Gas Grade	Nozzle Model	Dynamic Back Pressure, Inches H_2O		
			CFH	CFH	CFH

Results Received by Date	Results Reviewed by Date	Results Approved/Disapproved

Form 1 (continued)

FACILITY SKETCH AND COMMENTS

Diagram
Show location of tanks, dispensers, buildings, and vents.

Comments

Form 2

Station Name and Address	**Dynamic Back Pressure** **Source Test Results**	Station Representative and Title Phone No. ( )
Permit Services/Enforcement:		Test Performed by:
Permit Conditions:		Test Date/Time:
Applicable Regulations:	Source: **GDF Vapor Recovery GDF # A/C #**	VN Recommendation:

Source Test Results and Comments:

Pump #	Gas Grade	Nozzle Model	Vapor Valve Make/Model	Nitrogen Flow, CFH	Nozzle/Hose Assembly	Dynamic Back Pressure, Inches of Water Column Riser to U.G. Tank	 Vapor Valve	Total Δ P, Inches H_20

Test Received by: Date:	Test Reviewed by: Date:	Test Approved/Disapproved: Date:

Form 2 (continued)

FACILITY SKETCH AND COMMENTS

Diagram
Show location of tanks, dispensers, buildings, and vents.

Comments

Form 3

	Dynamic Back Pressure **Source Test Results**	**Report No.:** — **Test Date:** _____ **Test Times:** **Run A:** _____

Source Information		**Representatives**
Station Name and Address	Station Representative and Title Phone No. ( )	Source Test Engineers
Permit Conditions:	Source: **GDF Vapor Recovery** **GDF # _____** **A/C # _____**	Permit Services Division/Enforcement Division Test Requested By:
Operating Parameters:		
Applicable Regulations:		VN Recommended:

Sources Test Results and Comments:

Riser #	Gas Grade	Dynamic Back Pressure, Inches H_20		
		CFH	CFH	CFH

Results Received by	Date	Results Reviewed by	Date	Results Approved/Disapproved

FORM 3 (CONTINUED)

FACILITY SKETCH AND COMMENTS

Diagram
Show location of tanks, dispensers, buildings, and vents.

Comments

	FORM 4 **Dynamic Back Pressure** **Source Test Results**	**Report No.:** — **Test Date:** _____ **Test Times:** **Run A:** _____

Source Information		**Representatives**
Station Name and Address	Station Representative and Title Phone No. ( )	Source Test Engineers
Permit Conditions:	Source: **GDF Vapor Recovery** **GDF #** _____ **A/C #** _____	Permit Services Division/Enforcement Division Test Requested By:
Operating Parameters:		
Applicable Regulations:		VN Recommended:

Sources Test Results and Comments:

Nozzle #	Gas Grade	Gallons Dispensed	Dynamic Back Pressure, In. H_2O		
			Max. B.P.	Min. B.P.	Rate, GPM

Results Received by	Date	Results Reviewed by	Date	Results Approved/Disapproved

FORM 4 (continued)
FACILITY SKETCH AND COMMENTS

Diagram
Show location of tanks, dispensers, buildings, and vents.

Comments

Section IV

California Environmental Protection Agency Air Resources Board

Vapor Recovery Test Procedure

TP-201.5

Air to Liquid Volume Ratio

Definitions common to all certification and test procedures are in:

D-200 Definitions for Vapor Recovery Procedures

For the purpose of this procedure, the term "CARB" refers to the State of California Air Resources Board, and the term "Executive Officer" refers to the CARB Executive Officer, or his or her authorized representative or designate.

1. PURPOSE AND APPLICABILITY

1.1 This test procedure is used to quantify the Air to Liquid (A/L) Volumetric Ratio of Phase II vapor recovery systems installed at gasoline dispensing facilities (GDF), provided the nozzles are compatible with the procedure. This procedure provides a method to determine compliance with the A/L requirements specified in the applicable California Air Resources Board (CARB) Executive Order (EO) for the specified Phase II vapor recovery system.

2. PRINCIPLE AND SUMMARY OF TEST PROCEDURE

2.1 A tight fitting adaptor is placed on the spout of a dispensing nozzle. The adaptor, which isolates air flow to the nozzle vapor collection ports, is connected to a volume gas meter. Gasoline is dispensed through the nozzle and the volume of air and vapors drawn through the vapor collection ports by the Phase II system vacuum pump is measured. The volume of the air mixture is recorded and compared with the volume of gasoline dispensed to determine the A/L Volumetric Ratio.

2.2 The test is conducted with the pressure/vacuum (P/V) relief valve(s) on the storage tank vent pipes installed, **unless** the Executive Officer determines that, due to the design of the system, the P/V valve is to be removed during the test.

2.2.1 If the P/V valve is required to be removed during the test, the absence of leaks at the P/V valve connection shall be verified upon completion of the test, using either liquid leak solution or a bagging technique, as applicable.

3. BIASES AND INTERFERENCES

3.1 Nozzle spouts which are damaged such that the A/L adaptor cannot fit over the nozzle spout preclude the use of this test.

3.2 Refueling points not capable of achieving dispensing rates required for conducting the A/L test, as specified in the applicable CARB Executive Order, preclude the use of this test for determining in-use compliance of certified systems.

3.3 Location or configuration of the vapor collection ports on the nozzle spout which are not compatible with the A/L adaptor specified in this procedure preclude the use of this test.

3.4 Bagging, or otherwise sealing any nozzle associated with the vacuum pump serving the nozzle being tested, may bias the test results towards compliance. **The A/L test to verify compliance shall be conducted without "bagging" any of the nozzles served by a common vacuum device.**

3.5 If the nozzle being tested introduces liquid into the test equipment, the A/L of that nozzle shall be deemed a failure of the A/L standard.

3.6 Do not drain or remove liquid in either the vapor passage of the hoses or the dispenser vapor piping prior to performing the test. Draining of this liquid gasoline will bias the test toward compliance.

3.7 Pressure in the headspace of the storage tank, created by draining the gasoline from the portable test tank to the storage tank, may bias the results of the test for systems certified to operate at, or near, atmospheric gauge pressure in the UST headspace. The test shall be conducted with the P/V valve installed, unless the Executive Officer or the applicable CARB Executive Order (EO) requires the P/V valve be removed during the test.

3.8 O-rings in the A/L adaptor that are not properly greased may bias the results toward noncompliance. This bias may be eliminated if the O-rings are lubricated immediately prior to each A/L test run.

4. SENSITIVITY, RANGE, AND PRECISION

4.1 The maximum rated capacity of the gas volume meter shall be at least 250 CFH and not greater than 3,000 CFH.

4.2 The minimum rated capacity of the gas volume meter shall be 25 CFH.

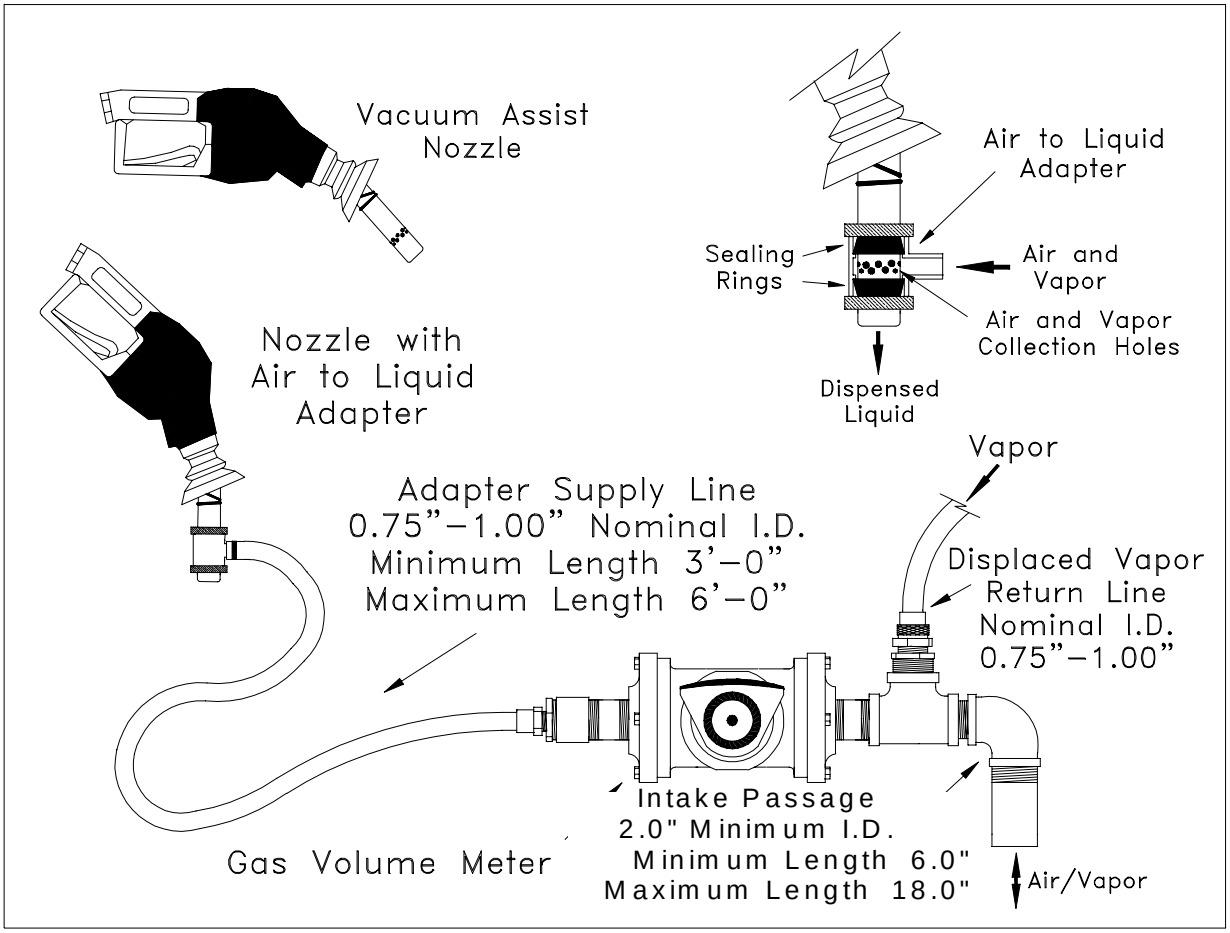
4.3 The minimum readability of the gas volume meter shall be 0.01 cubic feet.

4.4 Precision is ± 5 percent of the gas volume meter reading.

5. EQUIPMENT

5.1 Air to Liquid Adaptor. Use an Air to Liquid (A/L) adaptor compatible with the nozzle(s) employed at the GDF. The adaptor shall be capable of isolating the vapor holes in the nozzle and be connected to the gas volume meter with gasoline-resistant flexible tubing. The nominal inside diameter of the flexible tubing shall be between 0.75 and 1.00 inches, and the maximum length of the tubing shall be 6 feet. Figure 1 illustrates an A/L adaptor assembled on a nozzle. If the Executive Officer or the applicable CARB Executive Order specifies certain adaptors, only those adaptors shall be used.

Figure 1
Gas Volume Meter and Air To Liquid Adaptor



5.2 Gas Volume Meter. Use a Dresser Measurement Roots Meter®, or equivalent, to measure the volumetric flowrate through the A/L adaptor. The meter shall be equipped as shown in Figure 1 and the maximum allowable pressure drop(s) across the meter shall be as follows:

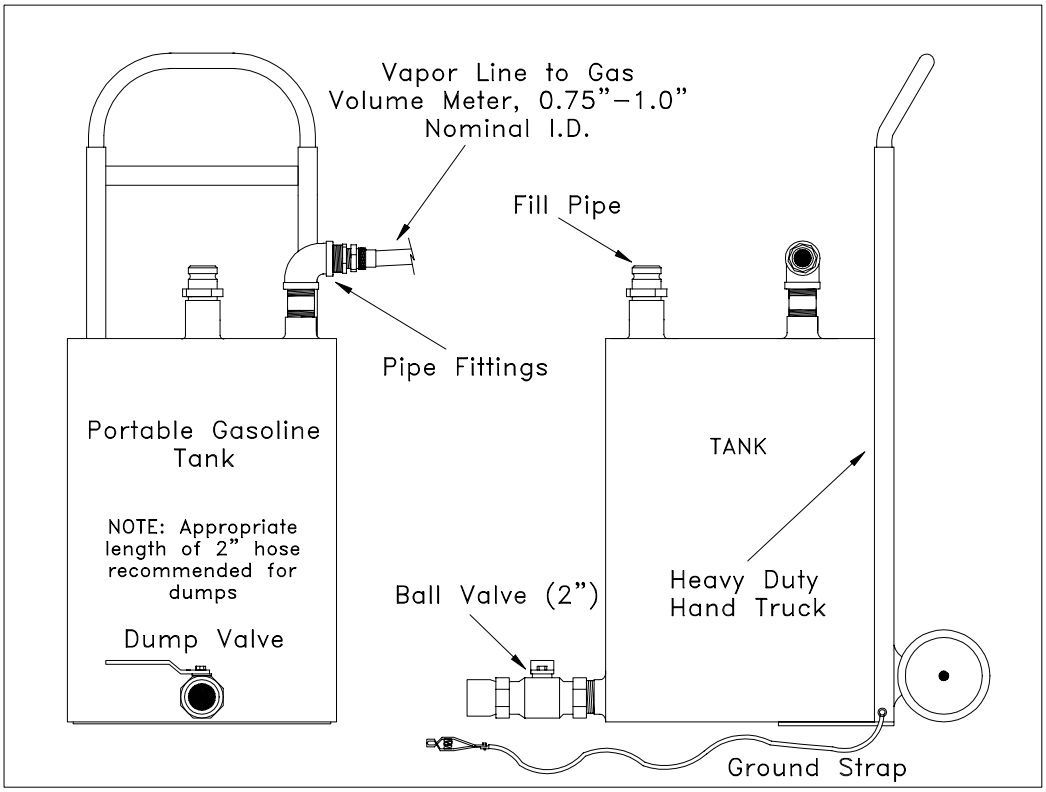
For a meter with a maximum rated capacity of 1000 CFH through 3,000 CFH:

1.10 inches H_2O at a flowrate of 3,000 CFH
0.05 inches H_2O at a flowrate of 30 SCFH.

For a meter with a maximum rated capacity of 800 to 1,000 CFH:

0.70 inches H_2O at a flowrate of 800 CFH
0.04 inches H_2O at a flowrate of 16 CFH

Figure 2
Portable Tank Assembly



5.3 Volume Gas Meter Inlet Manifold. This manifold is designed to return the vapors displaced from the portable gasoline tank assembly, at atmospheric pressure, to the inlet of the gas volume meter. This manifold shall be two (2.0) inches minimum inside diameter pipe. The intake passage of the manifold shall be no shorter than 6.0 inches and no longer than 18.0 inches. See Figures 1 and 3 for examples.

5.4 **Liquid Volume Meter**. Use the totalizer on the gasoline dispenser to measure the volume of gasoline dispensed during the test.

5.5 **Portable Gasoline Tank Assembly**. A portable tank, meeting fire safety requirements for use with gasoline, shall be used to receive the gasoline dispensed during this test. The tank shall have sufficient volume so that at least 4.5 gallons may be dispensed prior to activating the primary shutoff mechanism of the dispensing nozzle. Tank material, likely to provide contact with the nozzle spout, or A/L adaptor, during the entire dispensing event, shall be constructed of aluminum or brass or other materials approved by the local fire codes for such application. The tank and required plumbing configuration is shown in Figure 2 and Figure 3. This configuration permits a portion of the vapors displaced during testing to be returned to the gasoline storage tank. The minimum and maximum dimensions shown in Figure 2 and Figure 3 shall be adhered to in all cases.

5.6 **Stopwatch**. Use a stopwatch accurate to within 0.2 seconds.

5.7 **Lubricant**. Appropriate lubricant, either grease or spray lubricant, shall be used to ensure a leak-tight seal between the O-rings in the A/L adaptor and the nozzle spout.

5.8 **CARB Executive Order (EO)**. When this procedure is used to determine the compliance of an installed system, the applicable CARB Executive Order should be reviewed **prior** to conducting the test. This review shall include the status of the P/V valve (installed or removed) during the test and whether the processor should remain in operation during the test.

6. PRE-TEST PROCEDURES

6.1 Assemble the portable tank assembly and gas volume meter as shown in Figure 3. The minimum and maximum dimensions shown in Figure 3 shall be adhered to in all cases. **Ensure that the ground strap is properly connected to an acceptable ground**.

6.2 If more than one nozzle share vacuum plumbing with the test nozzle, one troubleshooting method for a low A/L ratio is to seal all nozzles other than the nozzle being tested, e.g., plastic bags and tape or rubber bands. If leaks in the nozzles/check valves served by common vacuum pump cause the bags to deflate, the low A/L ratio may have been caused by a leak through an idle nozzle during the test. **The A/L test to verify compliance, however, shall be conducted without "bagging" any of the nozzles.**

6.3 The gas volume meter shall be calibrated, within 180 days prior to conducting this procedure. In addition, calibration shall be conducted after any repairs or alterations to the meter. Calibrations, at a minimum, shall be conducted at flowrates of 30, 60, and 90 CFH (3.7, 7.5, and 11.2 gallons/minute) in accordance with one of the following:

(a) ARB Air Monitoring Quality Assurance, Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring, January 1979, or

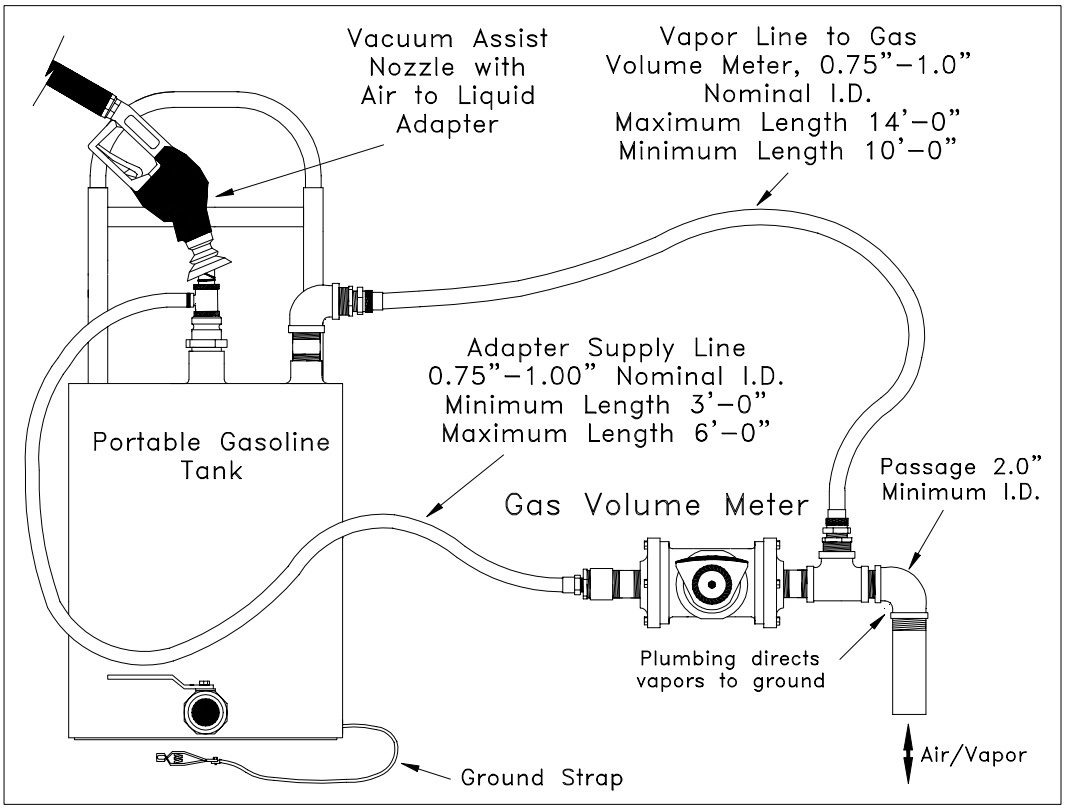
(b) US EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods, or

(c) EPA Method 2A, Measurement of Gas Volume Through Pipes and Small Ducts (40 CFR Part 60, Appendix A), or

(d) Appropriate calibration procedures in accordance with California Department of Food and Agriculture, Division of Measurement Standards and County Department of Weights and Measures (title 4, CCR, section 3.33).

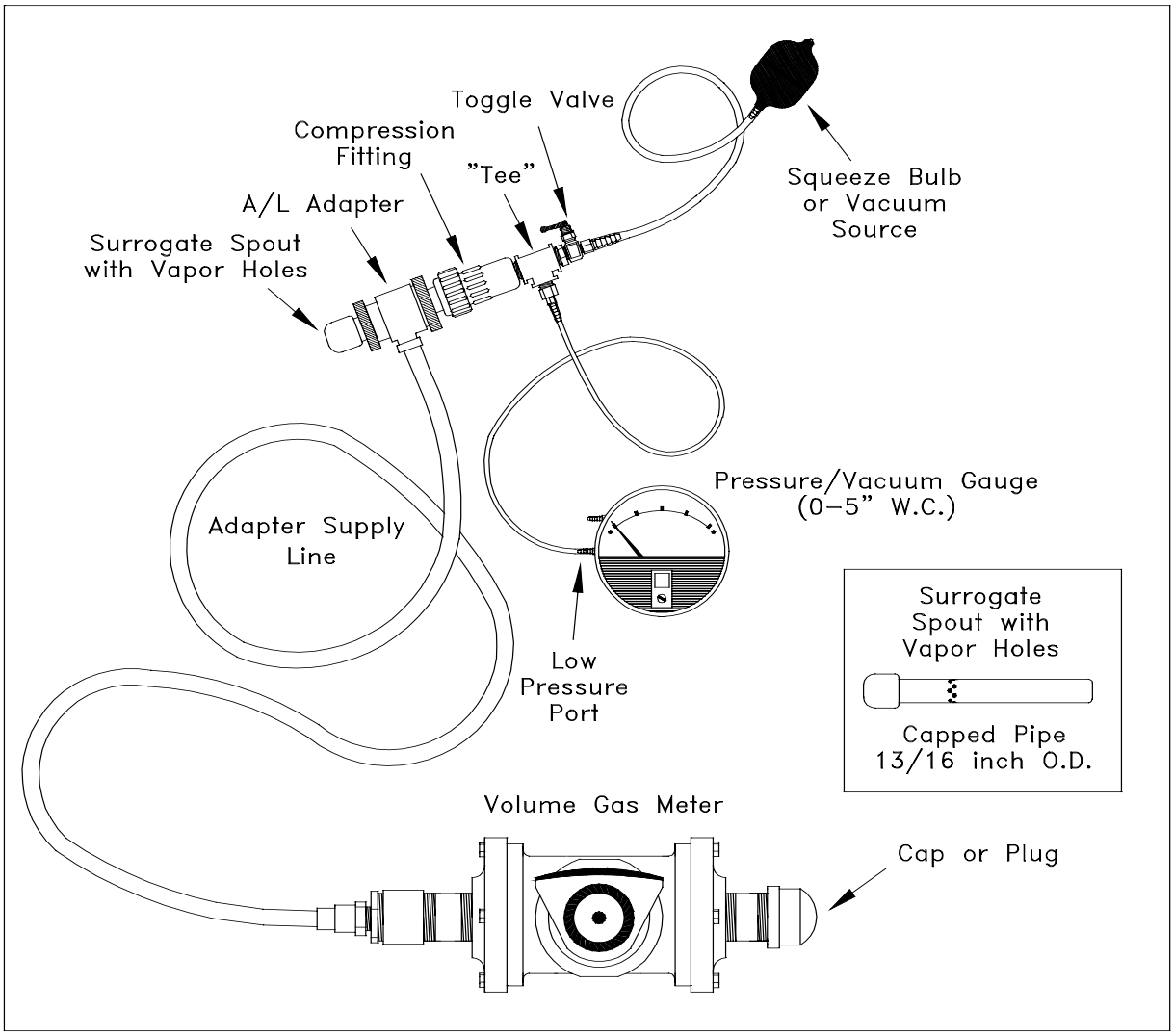
A copy of the most current calibration shall be kept with the meter.

Figure 3
Assembled Air To Liquid Volume Ratio Test Equipment



6.4 A one-time test to verify proper design of the tee connection at the gas volume meter shall be conducted. Disconnect the A/L adaptor from the nozzle and dispense between four and one-half and five (4.5 - 5.0) gallons into the portable test can, insuring a tight fit at the nozzle spout/portable tank fill pipe. The design is acceptable if the displacement on the gas volume meter is less than 0.01 cubic feet.

Figure 4
Air To Liquid Adapter Leak Test Assembly



6.5 Verify that the O-rings in the A/L adaptor, if applicable, are present and in good condition. O-rings with nicks, tears, or other deformations shall be replaced prior to the test. The O-rings shall be properly greased to ensure a vapor tight connection. Refer to the A/L adaptor manufacturer's instructions for recommendations. If the O-rings are lubricated before each test, the chance of an improper seal between the nozzle spout and the A/L adaptor is reduced.

6.6 Conduct a pre-test leak check of the A/L adaptor by connecting the A/L adaptor to a surrogate spout as shown in Figure 4. Induce a vacuum of five inches H_2O, gauge (5.00"WCg). Start the stopwatch. The vacuum shall be at least 4.95 "WCg after three minutes from the start of the leak check. Any test equipment which fails this pre-test leak check shall not be used to

conduct A/L testing for the purpose of determining compliance. Other leak check protocols are acceptable, provided they have been approved, in writing, by the Executive Officer.

6.7 This test procedure shall be conducted with the storage tank pressure/vacuum (P/V) valve(s) installed and the Phase I poppetted vapor coupler(s) in the closed position, **unless** otherwise specified by the Executive Officer or in the applicable CARB EO. If removal of the P/V valve during the test is required, use care to remove and store the valve until the test is completed and the valve is to be reinstalled.

6.8 Determine whether the processor, if applicable, should remain in operation during the test or be turned off. For compliance testing review the applicable certification EO.

6.9 With the portable tank and A/L test equipment assembled, dispense between four and one-half and five (4.5 - 5.0) gallons into the portable tank. This provides to initially condition the portable tank with gasoline vapors. This initial conditioning shall be conducted once per facility, prior to beginning testing at each facility.

7. TEST PROCEDURES

7.1 Carefully connect the A/L adaptor to the nozzle spout as shown in Figure 1, isolating the vapor ports of the nozzle and insuring a tight connection.

7.2 Record the initial reading from the index of the gas volume meter on the A/L Field Data Summary, as shown in Form 1. This initial reading shall be taken before each test. Do not use the final reading from the preceding test as the initial reading for the current test, unless it has been verified. This is necessary since the meter index may have moved due to the low pressure drop through the meter.

7.3 Reset the stopwatch and, if appropriate, reset the totalizer on the dispenser.

7.4 Fully engage the nozzle trigger and begin dispensing into the portable gasoline tank. **Ensure that the nozzle spout is in contact with the grounded tank assembly during dispensing**. Start the stopwatch when the totalizer indicates dispensing has started.

7.5 Dispense between four and one-half (4.5) and five (5.0) gallons of gasoline. If the applicable CARB Executive Order specifies an amount different than this range, the CARB required quantity shall be used.

If the nozzle being tested introduces liquid into the test equipment, the A/L of that nozzle shall be deemed a failure.

7.6 Simultaneously stop both the stopwatch and gasoline dispensing.

7.7 The following data for each test shall be recorded on the A/L Field Data Summary as shown in Form 1:

7.7.1 Dispenser (pump) number
7.72 Gas grade

7.73 Nozzle model and serial number
7.74 Initial gas volume meter reading, in cubic feet
7.75 Initial totalizer reading from the dispenser, in gallons
7.76 Final gas volume meter reading, in cubic feet
7.77 Final totalizer reading from the dispenser, in gallons
7.78 Elapsed time during dispensing, in seconds

Note: Units other than cubic feet, gallons, and seconds may be used, provided that Equation 9-1 is appropriately modified.

For certification testing, the test data are used to determine the A/L Volumetric Ratio that will be specified in the CARB EO. For compliance testing, continue as described below.

7.8 If the A/L Volumetric Ratio, as determined by Equation 9-1 is within the limits specified in the applicable CARB EO, the refueling point complies with the specifications of the applicable EO.

7.9 If the A/L Volumetric Ratio is outside the range specified in the applicable CARB EO by an A/L value of less than or equal to 0.10, conduct the test two additional times. Do not make adjustments to the gasoline dispensing or vapor recovery lines until all three test runs have been completed. Adjustments of the A/L test equipment, including the A/L adaptor and nozzle, is allowed as may be necessary to insure measurement accuracy. If the A/L test equipment is adjusted, then the prior test run results for that nozzle should not be used. Calculate the numerical average of the three test runs. If the average A/L value of these three test runs is within the allowable limits, compliance has been verified. If the resulting average is outside of the specified limits, the refueling point does not comply with the specifications of the applicable CARB EO.

If the A/L Volumetric Ratio is outside the range specified in the applicable CARB EO by an A/L value of greater than 0.10, the refueling point does not comply with the specifications of the applicable CARB EO.

7.10 If more than one nozzle share vacuum plumbing with the test nozzle, one troubleshooting method for a low A/L ratio is to seal all nozzles other than the nozzle being tested, e.g., plastic bags and tape or rubber bands. If leaks in the nozzles/check valves served by common vacuum pump cause the bags to deflate, the low A/L ratio may have been caused by a leak through an idle nozzle during the test. **The A/L test to verify compliance, however, shall be conducted without "bagging" any of the nozzles.**

7.11 To avoid a build-up of gasoline, drain any condensed gasoline, periodically or after each test run, from the hoses between:
(a) the gas volume meter and portable tank assembly, and
(b) the A/L adaptor and gas volume meter.

8. POST-TEST PROCEDURES

8.1 Remove the A/L adaptor from the nozzle.

8.2 Drain the dispensed product into the appropriate gasoline storage tank at the facility. **Ground the portable tank assembly to the storage tank before draining**. Do not mix product grades in the portable tank assembly without approval of the facility owner and use caution to drain the portable tank into the correct facility storage tank. If blending valves are utilized to produce product grades which do not have a dedicated storage tank, product from the blended grade shall be returned to the lower octane tank.

8.2.1 If the P/V valve was removed during the test, as specified in the applicable CARB EO, replace the valve prior to draining the product from the portable tank assembly to the storage tank after the last A/L test run is completed. Use liquid leak detector or a bagging technique to verify the absence of leaks at the interface between the P/V valve(s) and vent pipe(s). As an alternative, nitrogen may be used to impose a pressure in the storage tank headspace of between 1.5 and 2.5 inches H_2O prior to using the liquid leak detection solution or bagging technique.

8.3 At the conclusion of testing at the facility, conduct a post-test leak check of the A/L adaptor by connecting the A/L adaptor to a surrogate spout as shown in Figure 4. Raise the test pressure to five inches H_2O, gauge (5.00"WCg). Squirt liquid leak detector solution on interfaces and other potential leak sources while watching for the formation of bubbles. There shall be no formation of bubbles, or a drop in pressure below 4.95 "WCg for three minutes from the start of the test. The data collected during the A/L testing is invalid if the test equipment fails this post-test leak check.

8.4 Prior to transportation, the inlet and outlet of the gas volume meter shall be carefully sealed to prevent foreign matter from entering the meter.

8.5 At the conclusion of testing, the portable tank shall be transported in accordance with all applicable safety requirements.

9. CALCULATING RESULTS

9.1 The A/L Volumetric Ratio shall be calculated as shown in Equation 9-1.

$$A/L = \left[\frac{y(Vf - Vi)}{G_f - G_i}\right] \times 7.481 \qquad \textbf{[Equation 9-1]}$$

Where:

A/L = Air to Liquid Volumetric Ratio, dimensionless
y = Correction factor for gas volume meter. See Equation 9-3.
V_i = Initial gas volume meter reading, cubic feet
V_f = Final gas volume meter reading, cubic feet
G_i = Initial totalizer reading from the dispenser, gallons
G_f = Final totalizer reading from the dispenser, gallons
7.481 = Conversion factor from gallons to cubic feet, gallons per cubic foot

9.2 The gasoline dispensing rate during the A/L test shall be calculated as shown in Equation 9-2.

$$Q_g = \left[\frac{G_f - G_i}{t}\right] \times 60 \qquad \textbf{[Equation 9-2]}$$

Where:

Q_g = Gasoline dispensing rate, gallons per minute
G_i = Initial totalizer reading from the dispenser, gallons
G_f = Final totalizer reading from the dispenser, gallons
t = Elapsed time during dispensing event, seconds
60 = Conversion factor, seconds per minute

9.3 The correction factor for correcting observed values of the gas volume meter shall be calculated as shown in Equation 9-3.

$$y = \left[\frac{V_r}{V_m} \right] \qquad \textbf{[Equation 9-3]}$$

Where:

y = Correction factor for the gas volume meter's observed reading, dimensionless
V_r = True volume from current calibration of gas volume meter, cubic feet
V_m = Corresponding observed reading from gas volume meter, cubic feet

10. REPORTING RESULTS

10.1 Results submitted to a local air district for approval shall include the A/L Field Data Sheet as shown in Form 1, or other format specified by the local air district.

11. ALTERNATE PROCEDURES

11.1 This procedure shall be conducted as specified. Modifications to this test procedure shall not be used to determine compliance unless prior written approval has been obtained from the ARB Executive Officer, pursuant to Section 14 of Certification Procedure CP-201.

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GDF Name and Address _____ _ _____ _____ _____ _____	**A/L Field Data Sheet**	Testing Firm Name and Address: _____ _____ _____ Phone No. ( )
Test Date/Time:		Test Performed by:
Pre-Test Leak Check: Initial/Final Pressures, in. H_2O _____ / _____ **Post-Test Leak Check:** Initial/Final Pressures, in. H_2O ___ _ / _____	Source: **GDF Phase II Vapor Recovery** **GDF #** _____ **Permit #** _____	VN Recommendation: Y/N _____ Applicable CARB EO # _____ Allowable A/L Range _____

Pump #	Gas Grade	Nozzle Model & Serial #	Initial Totalizer, Gallons	Final Totalizer, Gallons	Gas Pumped, Gallons	Time, Seconds	Dispensing Rate, Gpm	Starting Meter Reading	Ending Meter Reading	A/L

Form (continued)

FACILITY SKETCH AND COMMENTS

Diagram
Show location of tanks, dispensers, buildings, and vents.

Comments

Section V

California Environmental Protection Agency Air Resources Board

Vapor Recovery Test Procedure

TP-201.6

Determination of Liquid Removal of Phase II Vapor Recovery Systems of Dispensing Facilities

1 APPLICABILITY

A set of definitions common to all certification and test procedures is in:

D-200 Definitions for Certification Procedures and Test Procedures for Vapor Recovery Systems

For the purpose of this procedure, the term "ARB" refers to the State of California Air Resources Board, and the term "ARB Executive Officer" refers to the Executive Officer of the ARB or his or her authorized representative or designate.

This procedure is used to quantify the removal of liquid gasoline from the vapor passage of coaxial hoses equipped with a liquid removal device. It is applicable in all cases where a liquid removal system is required in conjunction with a Phase II balance system. This test procedure is explicitly not applicable to vapor assist type systems.

2 PRINCIPLE AND SUMMARY OF TEST PROCEDURE

All gasoline is drained from the dispenser hose's vapor passage and a measured amount of liquid gasoline, usually 150 ml, is then introduced into the vapor passage. After ten gallons of gasoline are dispensed the liquid remaining in the hose is measured and the amount removed determined by subtraction with consideration of liquid which may adhere to the hose wall or be lost by evaporation.

3 BIASES AND INTERFERENCES

Pouring 150 ml of fuel into the vapor passage may cause some nozzles to shut off prematurely. This can be usually overcome by using a smaller volume.

Allowing insufficient time for liquid to drain from the hose can cause errors in measurement of the volume drained.

4 SENSITIVITY, RANGE, AND PRECISION

Range of measurement of liquid removal is approximately from 0 to 15 ml removed per gallon dispensed; upper range depends on volume of gasoline lost due to evaporation and surface adhesion to the hose wall and on the ability of the nozzle to function without premature shutoff with 150 ml of gasoline in the vapor passage.

5 EQUIPMENT

5.1 Stopwatch

Use a stopwatch accurate to within 0.2 seconds.

5.2 Graduated Cylinder

Use a shatterproof 250 milliliter cylinder which is compatible for use with gasoline.

6 CALIBRATION PROCEDURE

This section is reserved for future specification.

7 PRE-TEST PROTOCOL

7.1 Test, Challenge, and Failure Modes for Certification Testing

The specification of test, challenge, and failure modes such as the number of liquid transfer episodes, volume and volumetric rate of liquid transfer, storage tank volumes, etc. shall be done according to the principles of CP-201 § 5 for the testing and evaluation of vapor recovery equipment. The facility and system shall be prepared to operate according to any specified test, challenge, and failure modes.

7.2 System and Facility Preparation

System equipment and components shall be completely operational and, at newly constructed facilities, any storage tanks involved in the test shall have been initially filled to the appropriate volume a minimum of 24 hours prior to the scheduled test.

7.3 Specific Pre-Test Protocol Items

(1) Use a stopwatch to accurately measure the gasoline dispensing rates at high, medium, and low nozzle hold-open clip settings with no other refueling activity occurring at the facility. At least one gallon shall be dispensed before timing the dispensing rate. For those nozzles without hold-open latches, use wedges to simulate the three latch positions. Record this data. Alternatively, dispensing rate may be determined simultaneously with liquid removal as provided for in Section 8 below.

(2) Use the graduated cylinder to pour 150 milliliters of gasoline into the vapor passage of the hose.

(3) Completely drain the gasoline from the vapor passage back into the graduated cylinder.

NOTE: The intent of these last two steps is to ensure that the vapor passage surfaces are pre-wetted with liquid gasoline to limit errors due to liquid lost by adhesion to these surfaces in subsequent measurements.

8 TEST PROCEDURE

(1) Use the graduated cylinder to pour 150 milliliters of gasoline into the vapor passage of the hose.

(2) Using the high hold-open clip setting, dispense 10.0 ±0.10 gallons into the vehicle gas tank with no other refueling activity occurring at the facility, measuring the dispensing time with the stopwatch if the dispensing rate was not previously established. Record the exact volume (and dispensing time if measured). If premature nozzle shutoff occurs after pouring 150 ml of gasoline into the vapor passage, then reduce the amount of gasoline poured into the vapor passage progressively in 25 ml increments to identify the largest volume which does not have this effect. Repeat all steps above and this step, adding the amount of gasoline thus established instead of 150 ml, and dispensing a proportionally lesser amount of fuel (i.e. (10.0 x liquidVolume/150ml)±0.10 gallons).

(3) Carefully drain any gasoline present in the vapor passage of the hose into the graduated cylinder. Record this quantity. If compliance is demonstrated at a high flow rate, testing at lower flow rates is not required unless specified by the ARB Executive Order applicable to the specific type of vapor recovery system or an applicable regulation.

(4) If necessary, repeat appropriate steps with the hold-open clip in both the medium and low positions. Record this data. If performance meets specified requirements of the ARB Executive Order applicable to the specific type of vapor recovery system or an applicable regulation at any of the three flow rates (high, medium or low hold-open clip settings), then compliance of the system shall be considered to be demonstrated. In the absence of other quantitative requirements the requirements of CP-201, section 4.2.6.1 shall apply if a system is determined by the Executive Officer of the ARB to be subject to performance specifications for liquid removal devices.

(5) Use the graduated cylinder to pour the same amount of gasoline into the vapor passage of the hose. Dispense no gasoline.

(6) Completely drain the gasoline from the vapor passage back into the graduated cylinder. Subtract this quantity from the volume added. This value represents the volume of gasoline lost due to evaporation in transfer to and from the graduated cylinder and adhesion of liquid to vapor passage surfaces in previous measurements.

9 QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

This section is reserved for future specification.

10 RECORDING DATA

Record data on a form similar to the one shown in Figure 1.

11 CALCULATING RESULTS

The volume of liquid gasoline removed from the hose vapor passage per gallon of gasoline dispensed is calculated as follows:

$$VR = \frac{(VI - VW) - VF}{G}$$

where:

VR	=	Gasoline removed per gallon dispensed, milliliters/gallon
VI	=	Total initial volume poured into hose vapor passage, milliliters
VW	=	The liquid lost due to wall adhesion and evaporation, milliliters
VF	=	The volume of gasoline remaining in the hose vapor passage after dispensing, milliliters
G	=	The total gallons dispensed, gallons

12 REPORTING RESULTS

This section is reserved for future specification.

13 ALTERNATIVE TEST PROCEDURES

Test procedures, other than specified above, shall only be used if prior written approval is obtained from the ARB Executive Officer. In order to secure the ARB Executive Officer's approval of an alternative test procedure, the applicant is responsible for demonstrating to the ARB Executive Officer's satisfaction that the alternative test procedure is equivalent to this test procedure.

(1) Such approval shall be granted on a case-by-case basis only. Because of the evolving nature of technology and procedures for vapor recovery systems, such approval shall not be granted in subsequent cases without a new request for approval and a new demonstration of equivalency.

(2) Documentation of any such approvals, demonstrations, and approvals shall be maintained in the ARB Executive Officer's files and shall be made available upon request.

14 REFERENCES

This section is reserved for future specification.

15 FIGURES

Figure 1. Field Data Form

Figure 1. Field Data Form

Facility Name & Address_____
Inspector_____ Date_____
Vapor Recovery System Type_____
Applicable Air Resources Board Executive Order # _____

Pump Number	Gasoline Grade	(VI) Liquid Gasoline Added, ml	(G) Gallons Dispensed	(T) Time to Dispense, Seconds	60(G)/(T) Dispensing Rate, GPM	(VF) Liquid Gasoline Remaining, ml	(VW) Liquid Gasoline Lost With No Dispensing	(VI+VW-VF)/G Removal Rate, ml/gallon

Field Data Form (continued)

FACILITY SKETCH AND COMMENTS

Diagram
Show location of tanks, dispensers, buildings, and vents.

Comments

Section VI

Executive Order G-70-186 Exhibit 4

Vapor Return Line Vacuum Integrity Test for the Healy Model 400 ORVR System

1. Applicability

1.1 This test procedure is used to verify the vapor tightness of the portion of the Healy system which is subjected to relatively high levels of vacuum in the vapor return lines. A defective vapor valve, or any other defect which compromises the integrity of the vapor lines from the nozzle to the central vacuum unit, may cause the ingestion of large amounts of air. Excess air in the storage tanks will cause significant vent emissions when the pressure exceeds the pressure setting of the P/V valve. Ingested air will also cause the evaporation of gasoline in the storage tanks and may result in observable product shrinkage.

Note: This test is required in addition to, and not as an alternative for, the static pressure decay test in Exhibit 3.

2. Principle

2.1 The vapor lines from the nozzle to the central vacuum unit are isolated from the underground storage tanks by closing the vapor and siphon line ball valves after activating the central vacuum unit. The unit is turned off and the vacuum is allowed to decay. The value is compared with an allowable value.

3. Range

3.1 If mechanical pressure gauges are employed, the full-scale range of the pressure gauges shall be zero to 100 inches water column (0 - 100" wc), to be sensed as vacuum. Maximum incremental graduations of the pressure gauge shall be 2 inches wc and the minimum accuracy of the gauge shall be three percent of full scale. The minimum diameter of the pressure gauge face shall be four (4) inches.

3.2 If an electronic pressure measuring device is used, the full scale range of the device shall not exceed zero to 200 inches water column (0 - 200" wc) with a minimum accuracy of 0.5 percent of full scale.

4. Interferences

4.1 Any attempts to dispense product during the test will open the lines being tested and invalidate the results.

5. Apparatus

5.1 Pressure Measuring Device. Use a pressure gauge, or an electronic pressure measuring device, set up to measure vacuum, to monitor the decay of the vacuum level in the vapor return lines. The pressure measuring device shall, at a minimum, be readable to 2 inches water column.

5.2 Stopwatch. Use a stopwatch accurate to within 0.2 seconds.

6. Pre-Test Procedures

6.1 There shall be no product dispensing during the test.

6.2 All pressure measuring device(s) shall be bench calibrated using either a reference gauge or incline

manometer. Calibration shall be performed at 20, 50 and 80 percent of full scale. Accuracy shall be within two percent at each of these calibration points. Calibrations shall be conducted on a frequency not to exceed 90 days.

6.3 Remove the tap or quick-connect cap and install the pressure measuring device. The device shall be installed in the portion of the vapor line to be isolated.

7. Testing

7.1 Turn on the central vacuum unit (CVU) by activating a dispenser. The CVU is turned off by replacing the nozzle on the dispenser. Alternatively, the test may be conducted immediately following product dispensing.

7.2 Observe the vacuum level on the pressure measuring device. When the vacuum level is stable, or at the end of the dispensing operation, close the vapor and siphon line ball valves to isolate the vapor lines from the storage tanks (refer to Exhibit 2,Figures 2A thru 2D and Figure 3 for the location of the ball valves) and turn off the CVU by replacing the nozzle on the dispenser. If a stable vacuum level is not observed after one minute of CVU operation, or if the stable vacuum level is less than that indicated in Exhibit 2 as within the normal vacuum level for the CVU installed, turn off the CVU and check for problems before proceeding with the test.

7.3 Note the initial vacuum level and start the stopwatch. Record the vacuum level at one minute intervals. After five minutes, record the final vacuum level.

7.4 Calculate the difference between the final vacuum level and the initial vacuum level to obtain the observed change in vacuum. Note this value as the "measured DP". Estimate the total length of 2 inch diameter vapor return pipe from the dispensers to the CVU. Use this value to obtain the "calculated DP" in equation 4.1. If the "measured DP" is greater than the value obtained by equation 4-1**,** then a vapor leak is evident and the system has failed. If the vacuum level does not decay more than the allowable level, proceed to Section 8.

Equation 4.1

$$DP = \frac{800}{N}$$

Where:

N = The approximate length of 2 inch vapor return pipe from the dispensers to the central vacuum unit to the nearest 20 feet .

DP = The observed change in vacuum level in inches of water column during a five minute observation period.

(**Note**: If the station contains 3 inch vapor return pipes, multiply the answer in Equation 4.1 by 0.5. This equation is based on an allowable leak rate of 0.08 gallons per minute.)

7.5 If the system has failed to meet the criteria set forth in Section 7.4, repair and replace defective components as necessary and repeat the test. Defective nozzles or other components may be diagnosed by bagging with bags containing air and observing collapse of the bags, or by otherwise isolating suspected components.

Note: This is only for diagnostic purposes; the test shall not be conducted with any bagged or isolated components.

7.6 If the system contains more than one CVU, repeat for each CVU and associated piping.

8. Post-Test Procedures

8.1 Remove the pressure measuring device and plug or cap to ensure that the connection point is leak tight.

8.2 Open the valves which were closed to isolate the vapor return lines.

9. Reporting

9.1 The observed initial, interim and final vacuum levels observed, the type of pressure measuring device (including range and accuracy and date of last calibration), the number of nozzles associated with the CVU and the measured DP shall be reported. Table 1 may be used to record the test results and information.

TABLE 1

Tank #	Nozzles associated with CVU	Vacuum Levels							
		Initial (1)	One min (2)	Two Min (3)	Three Min (4)	Four Min (5)	Five Min (6)	Measured DP (1) – (6)	Calculated DP= 800/N Equation A
1									
2									
3									
4									
5									
6									

Pressure Measuring Device Type: _____

Measurement Range: _____ Accuracy: _____

Date of last calibration: _____

Section VII

Executive Order G-70-186 Exhibit 6

Ten Gallon Per Minute Limitation Compliance Verification Procedure

Compliance with the 10 gallon per minute flow rate limitation shall be determined with the following methodology. It is recommended that the maximum dispensing rate through each nozzle/hose assembly be verified.

1) The facility uses identical models of hoses, nozzles, and breakaways:

Check the nozzle closest to the submersible turbine pump (STP) for each gas grade, or STP, at the facility. With no other dispensing occurring which uses the same STP, dispense gas into a vehicle or approved container. Dispensing shall be conducted in the "hand-held, wide-open" mode. Using a stopwatch accurate to at least 0.2 seconds, begin timing the dispensing rate after at least one gallon has been dispensed. This one gallon buffer is necessary due to the "slow-start" nature of some dispensers. Determine the time required to dispense 2, 3, 4, or 5 gallons of gasoline. The facility shall be deemed in compliance with the 10 gallon per minute limitations if the elapsed time meets, or exceeds, the times shown in Table 1. If the dispensing rate exceeds the allowable limit, a CARB certified flow limiting device shall be installed.

2) The facility uses different models of hoses, nozzles, or breakaways

Due to potential differences in pressure drops through the various components, each of the nozzle/hose assemblies shall be tested for maximum dispensing rates. Using the same criteria as above, determine the maximum dispensing rate through each nozzle/hose assembly. If the maximum dispensing rate exceeds the 10 gpm limit, a CARB-certified flow limiting device shall be installed.

Table 1
Verification of 10 gpm

Product Dispensed, gallons	Minimum Allowable Time, seconds
2.0	11.8
3.0	17.7
4.0	23.6
5.0	29.5

Note: The times have been corrected to allow for the accuracy of the measurement.

GLOSSARY

Section I

Abbreviations

AAFES
Army and Air Force Exchange Service

ACSIM
Assistant Chief of Staff for Information Management

AMC
United States Army Materiel Command

APG
Aberdeen Proving Ground

AR
Army Regulation

BTU
British Thermal Unit

COR
Contracting Officer's Representative

DA
Department of the Army

DIC
Document Identifier Code

DOD
Department of Defense

DODAAC
DOD Activity Address Code

EOC
Emergency Operations Center

FY
Fiscal Year

gal
gallon

GOCO
Government—owned, Contractor—operated

hr
hour

lb
pound

min
minute

MWR
Morale, Welfare and Recreation

NSN
National Stock Number

PAM
pamphlet

PAO
Public Affairs Office(r)

USC
United States Code

wt
weight

Section II

Terms

Acid Rain
The result of sulfur dioxide (SO2) and nitrogen oxides (NOx) reacting in the atmosphere with water and returning to earth as rain, fog, or snow. Broadly used to include both wet and dry deposition.

Action
An activity.

Activated Carbon Canister
Pollution control device used to filter pollutants out of air or water.

Actual Emissions
Emissions, in tons per year, which a source discharged during a calendar year or other specified period of time.

Air Dispersion
The scattering, separating, or dispersion of an air plume.

Air Pollution
The presence in the outdoor atmosphere of substances in quantities, having characteristics, and being of a duration which, from any single source or in combination with other sources, are, or may be predicted with reasonable certainty to be, injurious to human, plant, or animal life or to property, or which unreasonably interfere with the proper enjoyment of the property of others by reason of the emission of odors, solids, vapors, liquids, or gases.

Air Pollution Episode
A condition justifying a proclamation by the Governor, the Secretary, or the Secretary's designee whenever it is determined that the accumulation of air pollutants in any place, locality, county, or other area in the State may attain, is attaining, or has attained levels which, if sustained or exceeded, would lead to a threat to the health of the public.

Air Pollution Episode System
Established standards and procedures that need to be followed whenever the pollution of the air has the potential of reaching an emergency condition if allowed to go unchecked.

Air Stagnation Advisory
A forecasted atmospheric stagnation that is expected to last 36 hours or more.

Air Strippers
See Air Stripping.

Air Stripping
A full-scale remediation system in which volatile organics are partitioned from ground water by greatly increasing the surface area of the contaminated water exposed to air.

Ambient Impact Analysis
Demonstration that the air emissions from a source or facility will not endanger the public health.

Annual
Calendar year unless otherwise specified.

Annual Fuel Use
When referring to space heaters, the total fuel consumed during the period October 1 of one year to September 30 of the following year.

Appliance
Any device which contains and uses a class I or class II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer.

Atmospheric Stagnation
A measure of the inability of the atmosphere to adequately dilute and disperse pollutants emitted into it, based on values of specific meteorological parameters of the microscale, mesoscale, and macroscale features, and which satisfies the criteria established by the National Meteorological Center set forth in Environmental Science Service Administration Technical Memorandum WBTM-NMC 47 published by the Department of Commerce, May, 1970.

Attainment Area
An area in which levels of a criteria air pollutant meet the national ambient air quality standard for the pollutant.

Automatic Shutoff Valve
The valve that shutoffs the nozzle in order to prevent the overfill of the fuel tank.

Baghouse
Also referred to as a Fabric Filter.
An air pollution control technology where particles and flue gas are separated in tube-shaped filter bags arranged in parallel flow paths. The particulates are collected either on the outside (dirty gas flow from outside-to-inside) or the inside (dirty gas flow from inside-to-outside) of the bag.

Basecoat/Clearcoat System
Two-stage topcoat composed of a pigmented basecoat stage and a clearcoat stage.

Bench Scale
Testing of materials, methods, or chemical processes on a small scale, such as a laboratory worktable.

Best Available Control Technology (BACT or T-BACT)
Emission controls based on the maximum degree of reduction that the MDE determines, on a case-by-case basis, is available for each air pollutant discharged by the source, taking into account the potency and toxicity of each of the air pollutants as well as the environmental, energy, and economic impacts of the control technology.

Biennial
Occurring every two years.

Boiler
An enclosed vessel in which water is heated and circulated, either as hot water or as steam, for heating or power.

Breakthrough
Occurs when the VOC concentration in the gas stream leaving the canister is greater than 15 percent of the VOC concentration in the gas stream entering the first canister.

Bromine
A dark, red liquid with a pungent odor. Bromine is found on the periodic table with an atomic number of 35 in group VIIA.

Capacity Factor
(ii) The ratio of a unit's actual annual electric output (expressed in MWe-hr) to the unit's nameplate capacity times 8760 hours, or
(2) The ratio of a unit's annual heat input (in million British thermal units or equivalent units of measure) to the unit's maximum design heat input (in million British thermal units per hour or equivalent units of measure) times 8,760 hours.

Capture Efficiency
Weight per unit time of a pollutant entering a capture system and delivered to a control device, divided by the weight per unit time of the total pollutant generated by a source of the pollutant, expressed as a percentage. It reflects how much of the pollutant is captured and routed to the control device.

Carbon
An element that the ability to combine with itself forming either long chains, or closed chains called rings.

Carbon Monoxide
Colorless, odorless, poisonous gas, produced by incomplete burning of carbon-based fuels.

CAS Number(s)
Unique identifier(s) for chemical substance(s).

Catalyst
A substance, usually present in small amounts compared to the reactants, that speeds up the chemical reaction rate without being consumed in the process.

Catalyst Bed
A set volume of catalyst-containing material designed to facilitate contact between the gas stream and the catalyst materials. The bed is usually either in the form of a layer of beads or as a series of passages through a honeycomb structure.

Catalytic Oxidizer
An off-gas post treatment unit for control of organic compounds. Gas enters the unit and passes over a support material coated with a catalyst (commonly a noble metal such as platinum or rhodium) that promotes oxidation of the organics. Catalytic oxidizers can also be very effective in controlling odors. High moisture content and the presence of chlorine or sulfur compounds can adversely affect the performance of the catalytic oxidizer.

Central Fire Headquarters
Harford County Central Fires Headquarters.

Certificate of Public Convenience and Necessity
Document issued by the Maryland Public Service Commission for the construction of a generating station or an overhead transmission line, or modification to an existing electric generating station or an existing overhead transmission line in Maryland.

Charbroiler
Any equipment, device, or contrivance used for cooking of meat on a grill through radiant heating.

Chemical Analyses
Scientific analyses of or relating to chemistry; or of or relating to the properties or actions of chemicals.

Chlorofluorocarbons
Any of various halocarbon compounds consisting of carbon, hydrogen, chlorine, and fluorine, once used widely as aerosol propellants and refrigerants. They are believed to cause depletion of the atmospheric ozone layer.

Class I Ozone Depleting Substance
Refers to the controlled substances listed in Appendix F Section I of this regulation or in 40 CFR 82.3, Appendix A to Subpart A.

Class I Toxic Air Pollutant
Substance or group of substances that is listed in Appendix D Section I of this regulation or in COMAR 26.11.16.06.

Class II Ozone Depleting Substance
Refers to the controlled substances listed in Appendix F Section II of this regulation or in 40 CFR 82.3, Appendix B to Subpart A.

Class II Toxic Air Pollutant
Any substance that is not listed as a Class I TAP, for which there is no ambient air quality standard under COMAR, that is not a simple asphyxiant or nuisance particulate and that is a health hazard as that term is defined in 29 CFR 1915.1200; or is listed in Appendix D Section II of this regulation or in COMAR 26.11.16.07B as an existing source Class II TAP, either individually or as a member of group of substances.

Clean Air Act
Federal law passed in 1970 to regulate air pollution, by requiring the US EPA to set national standards and clean up objectives for common air pollutants. The law was amended in 1977 and again in 1990, but the basic framework of the law, and its public health objective have remained, intact.

Clear Coating
A coating that, when applied not less than 0.001 inch thick on a glass microscope slide having an opacity less than 15 percent, causes the opacity to increase less than 5 percent opacity.

Coating
A liquid, liquefiable, or mastic composition which is converted into a solid protective, decorative, or adherent film after application as a thin later. This includes paints, varnishes, lacquers, stains, shellacs, film-forming polymers, waxes, and oils, which are applied to metal, paper, fabric, wood, glass, stone, concrete, plastic, and other types of surfaces.

Coaxial Piping System
System only requiring one opening in the tank for both filling up the tank with gasoline and the collection of vapors during the exchange.

Cold Degreasing
The use of degreasing material that removes grease from metal, but also leaves a residue on metal for anti-corrosion and other protective purposes. It does not include industrial wiping operations, cleaning of electronic assemblies, stripping or industrial coating removal systems used to remove propellants, paints, or other previously applied coatings other than grease from metal.

Combustion
The process of burning.

Combustion Analysis
The measurement of CO and O_2 in the flue gas at the normal operating load and calculation of minimum excess air.

Combustion Optimization
Process used to optimize the burning of a boiler or space heater to ensure that it is emitting the minimal air pollutants.

Compliance
Acting according to air pollution standards.

Compliance Plan
A document approved by either the MDE or the EPA that spells out the actions and requirements that a facility or source will impose to act in accordance with air pollution standards.

Compressed Natural Gas
Odorless, colorless, and tasteless gas consisting mostly of methane and is drawn from gas wells or in conjunction with crude oil production.

Condenser
Air pollution control device used to remove solvents and vapors from dirty gas streams and may be the first technology in an air cleaning system. The condensed material may be suitable for recycling, or may require treatment in a liquid effluent treatment plant before discharge.

Construction
Any physical change or change in the method of operation, including fabrication, erection, installation, demolition, or modification of an emissions unit, which would result in a change in actual emissions.

Control Device
Equipment whose primary purpose is to reduce the discharge of emissions into the atmosphere in order to comply with air pollution requirements.

Control Efficiency
Ratio of the emissions released by a control device and the emissions introduced to the control device, expressed as a percentage.

Control Officer
Harford County Health Officer.

Criteria Pollutants
Six pollutants for which the EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards: carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide.

Curing Booth
A booth used to prepare, preserve, or finish by a chemical or physical process.

De minimus
A level of pollutants that is considered to be insignificant and not needing to be controlled.

Defective equipment
The absence, disconnection, or malfunctioning of an approved system or part of an approved system, including:
(i) A vapor return line that is crimped, flattened, blocked, or that has any hole or slit from which vapors may leak;
(ii) A nozzle bellows that has any hole through which a 1/4 inch diameter cylindrical rod will pass, or any slit 1 inch or more in length;
(iii) A nozzle faceplate or facecone that has 25 percent or more of its surface torn or missing;
(iv) A nozzle without an automatic overfill control mechanism or with an inoperable overfill control mechanism;
(v) A nozzle without a vapor check value or with a malfunctioning vapor check value;
(vi) Any underground equipment that is not vapor tight or any equipment that has obstructions prohibiting the flow of vapor; and
(vii) A missing, inoperable, or malfunctioning vapor processing unit, vacuum generating device, pressure or vacuum relief valve, vapor check valve, or any other component of an approved system.

Degreasing
The removal of oils and greases from the surface of the metal workpiece. This process can be accomplished with detergents as in alkaline cleaning or by the use of solvents.

Degreasing Material
Any substance used to remove grease from metal.

Density
The ratio of mass, or quantity of matter, to bulk or volume, especially as compared with the mass and volume of a portion of some substance used as a standard.

Deviation
Divergence from a regulatory requirement that leads to a situation of non-compliance.

Differential Pressure
The difference in pressure between two points of a system, such as between the inlet and outlet of a baghouse.

Direct Emissions
Any emissions that are an immediate result of an action.

Distillate Fuel Oil
All American Society for Testing and Materials numbered fuel oils other than residual.

Dual Piping System
Systems requiring two tank openings for the filling up of the tank with gasoline and the exhaust of vapors. The tanker trucks hook up two lines to this tank, one for the in-flow of gasoline and the other for the physical displacement of the vapors from the underground tank to the tanker truck.

Electrode
A metal or alloy in rod or wire forms used in electric arc welding to maintain the arc and at the same time supply molten metal or alloy at the point where the weld is to be accomplished.

Emergency
A sudden, unexpected, and unforeseen condition of such public gravity and exigency as to require immediate action.

Emissions
Any air pollutants discharged into the air.

Emission Source
Any property, person, or activity emitting an air pollutant.

Emissions Inventory
A detailed, itemized list, report, or record of sources of air emissions, especially a periodic survey of all the emission sources.

Evaporative Quencher
An air pollution control device used to cool the gas stream.

Exempt Source
Any property, person, or activity, emitting an air pollutant, that is excepted from the regulations.

Explosive
Any chemical compound, mixture, or device, the primary purpose of which is to function by explosion through substantially instantaneous release of gas and heat, unless the compound, mixture, or device is otherwise specifically classified by the Interstate Commerce Commission or other federal agencies.

Fabric Filter
See Baghouse.

Facecone
A component of a nozzle, located at the end of the flexible cone, that allows gasoline vapors to be collected.

Faceplate
A component of a nozzle, located at the end of the nozzle bellows, that provides the vapor seal when gasoline is dispensed into a motor vehicle.

Facility
Building or location.

FE-36
Fire extinguishing halocarbon gas with zero ozone depletion potential. It is part of the hydrofluorocarbon group and is called Hexafluoropropane ($CF_3CH_2CF_3$).

Federal Action
Any activity that creates an air emission that the Federal government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under Title 23 U.S.C. or the Federal Transit Act. Where the Federal action is a permit, license, or other approval for some aspect of a non-Federal undertaking, the relevant activity is the part, portion, or phase or the non-Federal undertaking that requires the Federal permit, license, or approval.

Federal Enforceable State Operating Permit
Permits that are issued with federally enforceable limitations on the potential to emit of the emissions unit.

Fire Suppressants
Chemicals used to extinguish fires.

Flow Prohibiting Mechanism
Valve that prohibits the nozzle from dispensing gasoline unless the system has been activated.

Fluorine
A pale, yellow-green gas that has a strong, sharp odor.

Fuel
Coal or any other fossil fuel including natural gas, virgin distillate, or residual oil.

Fuel Burning Equipment
Any boiler or furnace that has the primary function of heating air water or any other medium through indirect heat transfer from the burning of fuels; or any stationary internal combustion engine or stationary combustion turbine used to produce mechanical or electrical energy.

Fugitive Emissions
Emissions which escape into the outdoor atmosphere through openings such as windows, doors, vents, roof monitors, poorly fitting closures, or poorly maintained equipment.

Gasoline Dispensing Facility
A site with equipment that is used to transfer gasoline from one or more stationary storage tanks into motor vehicle fuel tanks.

Gasoline Throughput
Amount of gasoline dispensed at a gasoline dispensing facility excluding any time period when the facility was shut down.

General Conformity Review
Multi-step process used to determine whether a Federal action meets the requirements of the general conformity rule and the associated State Implementation Plan.

General Conformity Rule
Legislation designed to ensure that Federal actions do not impede local efforts to control air pollution.

Ground Level Ozone
Commonly referred to as smog. It forms when VOCs and NOx combine in the presence of heat and sunlight.

Halogenated Substance
A substance containing chlorine, fluorine, or bromine, but does not include a substance that contains only trace quantities of chlorine, fluorine, or bromine that result from the degreasing of metal.

Halons
A class of simple hydrocarbon derivatives in which bromine, chlorine and fluorine are substituted for some or all of the hydrogen atoms. These compounds are used mainly as fire-extinguishing gases, the two best known being Halon 1211 (CF_2BrCl) and Halon 1301 (CF_3Br). The chemicals are long-lived in the troposphere and are implicated in the depletion of the ozone layer.

Halon 1211
See Halons

Halon 1301
See Halons

Hardener
A substance added to varnish or paint to give it a harder surface or finish.

Hazardous Air Pollutant
Any air pollutant listed in or pursuant to Section 112(b) of the Clean Air Act. The list is printed in Appendix E of this regulation.

Hazardous Inventory Tracking System
A computer database that enables APG to track a hazardous material from purchase request, to entry onto the installation, through i.ts use, to its disposal. For all of the hazardous materials stored and used at APG, HITS maintains chemical constituent data, chemical hazard information, and material safety data sheets (MSDSs). APG also uses HITS to promote its environmentally preferable purchasing (EPP) program.

Heptane
An organic chemical compound (C_7H_{16}) that is part of the alkane group.

High Performance Coating
A coating designed for continuous exposure to weather; subject to zero thickness (16 guage or greater) post-coating flexure; subject to temperatures consistently above 201^{o}F; subject to immersion in detergents, VOC, or other corrosive extremes; subject to impact loadings above 5 foot-pounds/square inch; or air dried at temperatures less than 180^{o}F.

Hydrochlorofluorocarbon(s) (HCFC)
One class of chemicals being used to replace the CFCs. They contain chlorine and thus deplete stratospheric ozone, but to a much lesser extent than CFCs. HCFCs have ozone depletion potentials (ODPs) ranging from 0.01 to 0.1.

Idle
The condition during which the engine is not performing the useful net work that enables the piece of equipment to accomplish its designated purpose.

Incendiaries
Any self-contained device intended to create an intense fire that can damage normally flame-resistant or retardant materials.

Indirect Emissions
Emissions that occur at a later time or distance from the place of the action, but are still a reasonable consequence to the action.

Installation
(i) Any article, machine, equipment, or other contrivance, including, but not limited to, emission control equipment, processing equipment, manufacturing equipment, fuel burning equipment, incinerators, or any equipment, or construction, capable of generating, causing, or reducing emissions.
(ii) Aberdeen Proving Ground as an U.S. Army Installation.
(iii) The act of installing.

Isotope
One of several nuclides having the same number of protons in their nuclei and hence having the same atomic number, but differing in the number of neutrons and therefore, in the mass number.

JP-8
A type of jet fuel.

Lowest Achievable Emission Rate
For any source, that rate of emissions which reflects –
(i) The most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or
(ii) The most stringent emission limitation which is achieved in practice by such class or category of source, whichever is more stringent.
In no event shall the application of this term permit a proposed new or modified source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance.

Major Modification
Any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of VOC, NO(x), or carbon monoxide.

Major Source
Stationary source or group of stationary sources, which are located on Aberdeen Proving Ground and under the control of the United States Army, where the actual or potential to emit emissions greater than the threshold limit established by the Clean Air Act.

Major Source of HAPs
A stationary source or group of stationary sources located at APG that emits or has the potential to emit pollutants, other than radionuclides, in excess of 10 tons per year of a listed HAP or 25 tons per year or more of any combination of HAPs.

Major Source of NOx
The actual or potential to emit of NOx emissions is greater than 25 tons per year.

Major Stationary Source of PM
Any stationary source which has the potential to emit, including fugitive emissions 100 tons or more per year of VOC.

Major Stationary Source of SOx
Any stationary source which has the potential to emit, including fugitive emissions 100 tons or more per year of VOC.

Major Stationary Source of VOC
Any stationary source which has the potential to emit, including fugitive emissions 25 tons or more per year of VOC.

Material Safety Data Sheet
Data sheet included with products to provide both workers and emergency personnel with the proper procedures for handling or working with a particular substance. MSDSs include information such as physical data (melting point, boiling point, flash point etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill/leak procedures.

Method 24
EPA method used to determine volatile matter content, water content, density, volume solids, and weight solids of surface coatings.

Methyl Bromide
A broad spectrum pesticide used in the control of pest insects, nematodes, weeds, pathogens, and rodents.

Military Device
Any device used by the military including, but not limited to, shells, bombs, projectiles, mines, missiles, rockets, shaped charges, grenades, perforators, and similar devices lawfully manufactured exclusively for military or police purposes.

Mobile Equipment
Any equipment which may be drawn or is capable of being driven on a roadway.

Mobile Source
Moving objects that release an air pollutant including on-road (highway) vehicles (e.g., automobiles, trucks and motorcycles) and non-road vehicles (e.g., trains, airplanes, agricultural equipment, industrial equipment, construction vehicles, off-road motorcycles, and marine vessels).

Modification
Any physical change in, or change in the operation of, a source or installation which causes a change in the quantity, nature or characteristics of emissions from the source or installation. However, this term excludes routine maintenance and routine repair, and increases in the hours of operation or in the production rate, unless these increases would be prohibited under any permit or approval conditions adopted by the department.

Modify
To make a modification.

Multi-Stage Coating System
A coating system composed of three or more coatings including a pigmented basecoat stage, semi-transparent midcoat stage, and a clearcoat stage.

National Ambient Air Quality Standards (NAAQS)
Standards set by the EPA for pollutants considered harmful to public health and the environment. There are two types of national air quality standards: primary standards which set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly; and secondary standards which set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, called criteria pollutants, which include carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide.

National Environmental Policy Act
An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

National Response Center
The federal operations center that receives notifications of all releases of oil and hazardous substances into the environment. It is open 24 hours a day and is operated by the U.S. Coast Guard, which evaluates all reports and notifies the appropriate agency.

Net Increase
Any increase or decrease in actual emissions, since January 1, 1991, in a contemporaneous 5-year period.

New Source Performance Standards
Technology-based standards applicable to new and modified stationary sources of regulated air emissions. The purpose of the standards is to ensure that all state implementation programs meet these minimum requirements.

New Source Review
Program that covers the construction of new major emitting industrial facilities and existing facilities that make major modifications that significantly increase pollution emissions. The program requires that new plants and major modifications of existing plants obtain a permit before construction, which will be issued only if the new plant or major modification includes pollution control measures that reflect best technology available.

Nitrogen Dioxide (NO_2)
A gas consisting of one atom of nitrogen and two atoms of oxygen.

Nitrogen Oxides (NOx)
Generic term for a group of highly reactive gases that contain nitrogen and oxygen.

Non-Attainment Area
Area where the air quality does not meet the required ambient air quality levels set by the NAAQS.

Nozzle
The spout at the end of the gasoline hose used to dispense and control the flow of gasoline from a stationary gasoline storage tank into motor vehicle fuel tanks.

Nozzle Bellows
A flexible component of a nozzle that is compressed to establish a seal between the nozzle faceplate and the filler neck of motor vehicle tank.

Nuclide
A type of atom specified by its atomic number, atomic mass, and energy state.

Opacity
Degree to which emissions reduce the transmission of light and obscure the view of an object in the background.

Open Burn
Burning of any materials that occurs in the open or in a receptacle other than a furnace, incinerator, or other equipment connected to a stack or chimney.

Operator
(i) The person who maintains, operates, or makes adjustments for efficient operation of equipment.
(ii) A dealer or other person who is responsible for the daily operation and maintenance of a facility and who is subject to the inspection, training, and reporting requirements.

Ozone
Odorless, colorless gas composed of three atoms of oxygen.

Ozone Action Day
Day where an exceedance of the federal 8-hour ozone standard is forecasted.

Ozone Depleting Chemical (ODC)
A compound that contributes to stratospheric ozone depletion. Ozone-depleting chemicals include CFCs, HCFCs, halons, methyl bromide, carbon tetrachloride, and methyl chloroform. ODCs are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When they break down, they release chlorine or bromine atoms, which then deplete ozone.

Ozone Depleting Substance (ODS)
A compound that contributes to stratospheric ozone depletion. Ozone-depleting substances include CFCs, HCFCs, halons, methyl bromide, carbon tetrachloride, and methyl chloroform. ODSs are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When they break down, they release chlorine or bromine atoms, which then deplete ozone.

Ozone Season
April through October when ozone concentrations are generally worse due to heat and sunlight.

Packed Bed Scrubber
An air pollution control device in which emissions pass through alkaline water to neutralize hydrogen chloride gas.

Packed Tower Air Stripper
A full-scale remediation system in which volatile organics are partitioned from ground water by greatly increasing the surface area of the contaminated water exposed to air. The typical packed tower air stripper includes a spray nozzle at the top of a tower to distribute contaminated water over the packing in the column, a fan to force air countercurrent to the water flow, and a sump at the bottom of the tower to collect decontaminated water.

Paint Spray Booth
A booth designed for painting that removes both harmful air pollutants before discharging them to the atmosphere and solvent vapors quickly so that their concentration does not build up to an explosive limit.

Part 70 Permit
Title V Operating Permit issued by the State of Maryland.

Part 70 Program
EPA grants authority to the State of Maryland to oversee the title V permits program. The program is called Part 70 because the regulations that establish minimum standards for State permit programs are found in the Code of Federal Regulations at 40 CFR Part 70.

Particulate Matter
Any material, except water in an uncombined form, that is or has been airborne, and exists as a liquid or a solid at standard conditions.

Permit to Construct
Maryland permit required for any new, modified, replaced, or relocated operation/equipment that discharges emissions to the outside air which ensures the State that all sources are in compliance with air quality requirements.

pH
An expression of the intensity of the basic or acid condition of a liquid. Mathematically, pH is the logarithium (base 10) of the reciprocal of the hydrogen ion concentration, [H+]. The pH may range from 0 to 14, where 0 is the most acid and 7 is neutral. Natural waters usually have a pH between 6.5 and 8.5.

Physical Analyses
Scientific analyses relating to the sciences dealing with matter and energy; especially physics.

Pit Barbecues
Any equipment, device, or contrivance for the cooking of meat on a spit using radiant heating.

Pollutant Standards Index (PSI)
A standardized reporting system for advising the public of possible adverse health effects due to air pollution. PSI is a reporting tool that converts measured air pollutant concentrations to a simple number on a scale of 0 to 500. A level of 100 on the PSI scale corresponds to the National Ambient Air Quality Standard for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, or particulate matter. Only the highest PSI is reported for any one period. The levels between 0 and 100 correspond to a percentage of the standard, while the levels between 100 and 500 are uniform intervals between the National Ambient Air Quality Standard and the "significant harm level", as defined by the U.S. Environmental Protection Agency.

Potential to Emit
Maximum capacity of a stationary source to discharge a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable through a permit condition, compliance plan, or administrative or court order.

Precoat
Coating which is applied to bare metal primarily to deactivate the metal surface for corrosion resistance.

Pretreatment
Any coating containing a minimum of 0.5 percent acid by weight, which is used to provide surface etching and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion.

Prevention of Significant Deterioration
Regulations which require sources to demonstrate no significant deterioration of air quality through the application of best available control technology.

Prime Coat
Initial later of coating applied in a multicoat application.

Primer Sealer
Any coating applied before the application of a topcoat for the purpose of corrosion resistance, adhesion of the topcoat, color uniformity, and which promotes the ability of a coating to resist penetration by the topcoat.

Primer Surfacer
Any coating applied before the topcoat application for the purpose of corrosion resistance, adhesion of the topcoat, or promoting a uniform surface by filling in surface imperfections.

Propane
A gas that is both present in natural gas and refined from crude oil. It is used for heating, lighting, and industrial applications. The term propane also includes liquefied petroleum gases such as butane and ethane.

Propellant
A fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.

Public Officer
An elected official.

R-11
Trichlorofluoromethane. A colorless, non-flammable, non-corrosive gas. Has an ether-like odor in high concentrations. Decomposes at high temperature to toxic substances.

R-12
Dichlorodifluoromethane (CCl_2F_2). A colorless, non-flammable, non-corrosive gas. Has an ether like odor in high concentrations.

R-13
Chlorotrifluoromethane (CClF3). A colorless, non-flammable, non-corrosive gas. Decomposes at high temperature to toxic substances

R-22
Chlorodifluoromethane ($CHClF_2$). A colorless, non-flammable, non-corrosive gas. Decomposes at high temperature to toxic substances.

R-113
Trichlorotrifluoroethane ($C_2F_3Cl_2$) or trichlorotrifluoroethane.

Radionuclide
An isotope of artificial or natural origin that exhibits radioactivity.

Reasonably Available Control Technology
The lowest emissions limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.

Reconstruction
The replacement of components of an affected or a previously non-affected source to such an extent that:
(i) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and
(ii) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

Record of Non-Applicability (RONA)
Short, written document used to declare that the requirements of the General Conformity Rule do not apply to a specific action.

Reducer
A reducing agent, either a developer or an agent for reducing density.

Refrigerants
A substance used to provide cooling either as the working substance of a refrigerator or by direct absorption of heat.

Regionally Significant
The total direct and indirect emissions of an individual pollutant amount to 10% or more of the Baltimore non-attainment area's total emissions.

Registration Permit
Maryland permit required for an existing operation/equipment that discharges emissions to the outside air to ensure that sources are in compliance with air quality requirements.

Remediation Systems
System used for cleaning-up, removing, containing, isolating, treating, or monitoring hazardous substances released into the environment.

Ringlemann Smoke Chart
A series of charts, numbered 0 to 5, which simulate various smoke densities by presenting different percentages of black. They are used for measuring the opacity of equivalent obscuration of smoke arising from stacks and other sources by matching the actual effluent with the various numbers, or densities, indicated by the charts. A Ringelmann No. 1 is equivalent to 20 percent black and a Ringlemann No. 5 is 100 percent black.

Risk-Based Screening Level
Concentration of a Class I toxic air pollutant in the atmosphere as determined under COMAR 26.11.16.03.

Safety Determinations
Testing, training, or demonstrations with explosives, propellants, incendiaries, or military devices involving an open flame.

Screening Analysis
Procedure for demonstrating compliance that compares maximum incremental ambient impacts with applicable screening levels.

Screening Level
Concentration of a toxic air pollutant in the atmosphere used to evaluate the air quality impacts.

Second Tier Analysis
Procedure for demonstrating compliance using an acceptable ambient level or an insignificant risk concentration instead of a screening level.

Semi-annual
Occurring or issued twice a year.

Severe Non-Attainment
A geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal standards and the area has a design value of 0.180 up to 0.190 ppm and had 15 years to attain.

Significant New Alternatives Policy (SNAP)
A program established under section 612 of the CAA that provides information on alternatives to ozone-depleting substances in a number of major industrial end-uses.

Small Appliance
Any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with five pounds or less of refrigerant: refrigerators and freezers designed for home use, room air conditioners (including window air conditioners and packaged terminal air conditioners), packaged terminal heat pumps, dehumidifiers, under-the-counter ice makers, vending machines, and drinking water coolers.

Solvents
Liquids that dissolve other substances (solutes), generally solids, without any change in chemical composition.

Source
Any property, real or personal, or person contributing to air pollution.

Source Classification Code
Number codes created by the United States Environmental Protection Agency used to identify processes associated with point sources that contribute emissions to the atmosphere.

SOx
A pungent, colorless, gaseous pollutant formed primarily by the combustion of fossil fuels.

Space Heater
Fuel burning equipment that consumes more than 60 percent of its annual fuel during the period from October 31 of one year through March 31 of the following year.

Special Dispersion Statement
A forecasted atmospheric stagnation that is expected to last more than 12 hours but less than 36 hours.

Specialty Coating
A coating used mostly for safety and enhanced adhesion purposes, including weld-through primers, adhesion promoters, uniform finish blenders, elastomeric materials, gloss flatteners, bright metal trim repair, and anti-glare/safety coatings.

Spray Absorber
Also referred to as a spray dryer or a dry scrubber.
An air pollution control device that sprays a highly atomized slurry (which may contain water) of an alkaline reagent into a hot flue gas to absorb SO_2. The high temperature of the flue gas evaporates the water (if a wet reagent was used) and a dust collector removes the "dry" reagent which has absorbed the pollutant (SO_2). The dry scrubber is placed before the dust collector.

Spray Dryer
See Spray Absorber.

Stack
Any flue, conduit, or duct arranged to conduct emissions.

Stack Emissions
Any pollutants discharged into the air through any flue, conduit, or duct.

Stack Height
The height of a stack measured from the ground elevation to the top of the stack, not including caps, nozzles, or other encumbrances.

Stack Test
A procedure for sampling a gas stream from a single sampling location at a facility, unit, or pollution control equipment. It is used to determine a pollutant emission rate, concentration, or parameter while the facility, unit, or pollution control equipment is operating at conditions that result in the measurement of the highest emission or parameter values (prior to any control device) or at other operating conditions approved by the MDE or the U.S. EPA.

Stage I Vapor Recovery
A system used to capture the gasoline vapors, which would otherwise be emitted, when a gasoline storage tank is refilled by a tank truck.

Stage II Vapor Recovery system
A system at a gasoline dispensing facility that is designed, installed, and used to collect, recover, and destroy gasoline vapors displaced from a motor vehicle's tank when gasoline is dispensed.

Standard Coating
All coatings other than high performance or clear coatings.

State Implementation Plan
State's self-authored plan for attaining and maintaining compliance with the Clean Air Act

Stationary Source
A location, person, or activity that does not move and release an air pollutant.

Sulfur Dioxide (SO_2)
A compound composed of one sulfur and two oxygen molecules.

Sulfur Oxide Gases (SOx)
Compounds formed when sulfur-containing fuel, such as coal and oil, is burned.

Sulfur Trioxide (SO_3)
Generally, a colorless liquid that can also exist as ice- or fiber-like crystals or as a gas. When exposed to air, it rapidly takes up water and gives off white fumes. It can react with water to form sulfuric acid.

Surface Preparation Material
A VOC-containing material applied to the surface of any miscellaneous metal part or product prior to the application of coatings to clean the substrate or to promote adhesion of subsequent coatings.

T-BACT
See Best Available Control Technology.

Tactical Vehicle
Military vehicle or equipment, which is owned by the Federal government, and used for tactical combat, or relief operations, or for training for these operations.

Thermal Oxidizer
Also termed an afterburner, it is a method of pollution control that can be applied to incineration as to control for air emissions polluted with small particles or combustible solids or liquids.

Title V Permit
Any permit issued, renewed, or revised pursuant to Federal or State regulations established to implement title V of the Clean Air Act. A Title V permit issued by a State permitting authority is called a part 70 permit.

Topcoat
Coating applied over primers or an original finish. Topcoat includes a basecoat/clearcoat system.

Toxic Air Pollutants
Pollutants that are known or suspected to cause cancer or other serious health effects.

Toxicity Clearance
A request for approval recommendation of single articles or compounds that are being considered for use by the Army. They require a yes/no judgment based upon potential toxicity and require no risk assessment codes.

Transfer Efficiency
The ratio of the amount of coating solids deposited onto the surface of a coated part to the total amount of coating solids used.

Tri-annual
Occurring every three years.

Troposphere
The first layer of the atmosphere, that closest to the surface of the Earth. The air surrounding the Earth consists of distinct zones, distinguished by the temperature gradient within each layer. The troposphere extends up about 16 to 18 km. in tropical regions and about 8 to 10 km in high latitudes. The air temperature in this layer decreases more or less continuously with increasing altitude. The troposphere contains about four-fifths of the mass of the atmosphere. Most of the air pollutants which get emitted at the Earth's surface are chemically broken down and/or deposited out in the troposphere. Only few chemicals (notably the chlorofluorocarbons) are chemically stable enough to resist breakdown in the troposphere and eventually enter the layer above it, the stratosphere.

Vacuum Extraction System
A treatment method for removing volatile organic compounds from soils by extracting soil vapor which contains volatile organic compounds in gas form.

Vapor Assist Systems Type 1
Use a mechanical device and the flow of gasoline to generate a vacuum, the magnitude of which is related to the volume of gasoline or an electromechanical device which collects gasoline vapors displaced when gasoline is dispensed.

Vapor Assist Systems Type 2
Provide a vacuum from a centrally located pump for all gasoline dispensers at the facility and are initiated by a trigger in the nozzle. This system is commonly referred to as a "Healy System."

Vapor Balance Line
Any connection closed to the atmosphere between the vapor space of two storage containers that will allow the vapors to be displaced as the liquid is transferred from one tank to another.

Vapor Balance Systems
Use the pressure generated in a vehicle tank by incoming fuel and the negative pressure in the gasoline storage tank to recover vapors displaced when gasoline is dispensed.

Vapor Degreasing
Application of heat to vaporize degreasing material in which the resulting vapors are used to remove grease from the metal.

Vehicle Refinishing
The activity of recoating a motor vehicle, mobile equipment, or parts of a motor vehicle or mobile equipment.

Visible Emissions
The appearance of a plume or air emissions as viewed by an observer.

VOC Containing Materials
Any material that contains volatile organic compounds.

VOC Degreasing Material
Any degreasing material, including water-based degreasing material, which contains 5 percent or more VOC.

Volatile Organic Compounds
Organic compounds that have a vapor pressure greater than 0.002 pounds per square inch (0.013 kilonewton/square meter) absolute.

Woodland
Land having a cover of trees and shrubs.

Section III

Special Abbreviations and Terms

AA
Aberdeen Area

AAPPSO
Army Acquisition Pollution Prevent Support Office

AEC
Activity Environmental Coordinator

AMSSB
Army Materiel Subordinate Soldier Biological

AP
Compilation of Air Pollutant Emission Factors

APGR
Aberdeen Proving Ground Regulation

ARIMS
Army Records Information Management System

ARMA
Air and Radiation Management Administration

ASA
Air Stagnation Advisory

BACT
Best Available Control Technology

C
Carbon

^{o}C
degrees Celsius

CAA
Clean Air Act

CAAA
Clean Air Act Amendments of 1990

CARB
California Air Resources Board

CAS
Chemical Abstracts Service

CERCLA
Comprehensive Environmental Response, Compensation and Liability Act

CFC(s)
Chlorofluorocarbon(s)

CFR
Code of Federal Regulations

CHPPM
United States Army Center for Health Promotion and Preventive Medicine

CNG
Compressed Natural Gas

CO
Carbon Monoxide

COMAR
Code of Maryland Regulations

CPCN
Certificate of Public Convenience and Necessity

cuft
cubic feet

DCP
Disaster Control Plan

DCSR
Defense Supply Center Richmond

DIO
Directorate of Installation Operations

DRMO
Defense Reutilization and Marketing Office

dscm
dry standard cubic meters

DSHE
Directorate of Safety, Health and the Environment

DTID
Disposal Turn-In Document

EA
Edgewood Area

EAPEP
Emergency Air Pollution Episode Plan

ECD
Environmental Compliance Division

EDP
Environmental Disaster Plan

EDT
Eastern Daylight Time

EPA
Environmental Protection Agency

EST
Eastern Standard Time

F
Fluoride

^{o}F
Degrees Fahrenheit

FESOP
Federal Enforceable State Operating Permit

FSTE
Fire Safety Test Enclosure

ft
feet

ft^{3}
cubic feet

GMAW
Gas Metal Arc Welding

gpm
gallons per minute

gr
grains

H
Hydrogen

HAP(s)
Hazardous Air Pollutant(s)

HAZCOM
Hazardous Communication

HCFC(s)
Hydrochlorofluorocarbon(s)

Hg
Mercury

HITS
Hazardous Inventory Tracking System

HP
Horsepower

HVAC
Heating, Ventilation, and Air Conditioning

in
inch

kg
kilogram

KW
Kilowatts

kWh
Kilowatts per hour

l
liter

LAER
Lowest Achievable Emission Rate

MBTU
Thousand British Thermal Units

MBX
Methyl Bromide

MDE
Maryland Department of the Environment

MDNR
Maryland Department of Natural Resources

mg
milligram

mm
millimeter

MMBtu or mmBtu
Million British Thermal Units

MSDS(s)
Material Safety Data Sheet(s)

MVAC
Motor Vehicle Air Conditioner

MWe
Megawatts

NAAQS
National Ambient Air Quality Standards

NEPA
National Environmental Policy Act

NOx
Nitrogen Oxides

NSPS
New Source Performance Standards

NSR
New Source Review

O_2
Oxygen

OAD(s)
Ozone Action Days

OAQPS
Office of Air Quality Planning and Standards

ODC(s)
Ozone Depleting Chemicals

ODS(s)
Ozone Depleting Substance(s)

PM
Particulate Matter

PM_{10}
Particulate Matter (less than 10 microns in size)

ppm
parts per million

PSD
Prevention of Significant Deterioration

PSI
Pollutant Standards Index

psi
pounds per square inch

psia
pounds per square inch atmospheric

PTE
Potential to Emit

R
Refrigerant

RACT
Reasonably Available Control Technology

REC
Record of Environmental Consideration

RMP
Risk Management Plan

RONA(s)
Record(s) of Non-Applicability

SCC
Source Classification Code

SCFD
Dry Standard Cubic feet

SDS
Special Dispersion Statement

SMAW
Shielded Metal Arc Welding

SOx
Sulfur Oxide Gases

SIP
State Implementation Plan

SNAP
Significant New Alternatives Policy

T-BACT
Best Available Control Technology for Toxics

TAP(s)
Toxic Air Pollutant(s)

TPY
Tons per year

VES
Vacuum Extraction System

VOC(s)
Volatile Organic Compound(s)

WTP
Water Treatment Plant

WWTP
Wastewater Treatment Plant

(AMSSB-GSH-E)

FOR THE COMMANDER:

DAVID G. BURDICK
Adjutant General

DISTRIBUTION:
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